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NO. 5.

The Missouri Muhlenbergias---III.

BY BENJAMIN FRANKLIN BUSH.

IOWA:

- Ames, *Ball* 113, August 5, 1896, M. B. G. Herb. No. 79950;
Ames, *Ball* 113, August 5, 1896, M. B. G. Herb. No. 79904;
Ames, *Hitchcock*, August, 1889, M. B. G. Herb. No. 79922;
Ames, *Hitchcock*, date not given, M. B. G. Herb. No. 79960;
Armstrong, *B. S.*, September, 1895, M. B. G. Herb. No. 79749
Armstrong, *Cratty*, August 21, 1897, M. B. G. Herb. No.
79910;
Dakota City, *Pammel*, August 8, 1896, M. B. G. Herb. No.
79951;
Iowa City, *Hitchcock*, August, 1888, M. B. G. Herb. No. 79911;
Ledyard, *Pammel* and *Cratty* 760, August 28, 1897, M. B. G.
Herb. No. 79921;
Ledyard, *Pammel* and *Cratty* 760, August 28, 1897, M. B. G.
Herb. No. 79925;
Ledyard, *Pammel* and *Cratty* 760, August 28, 1897, M. B. G.
Herb. No. 80106;
Ledyard, *Pammel* and *Cratty* 760, August 28, 1897;
Mount Pleasant, *Mills* 13, 1894, M. B. G. No. 79927;
Muscatine, *Mackenzie* 781, September 26, 1894;
Sioux City, *Wakefield*, August 30, 1887, M. B. G. Herb. No.
79949;
Tabor, *Pammel* 778, September 20, 1897, M. B. G. No. 79906;
Tabor, *Pammel* 778, September 20, 1897, M. B. G. Herb.
No. 79917;
Webster City, *Pammel* 274, June 15, 1895, M. B. G. Herb.
No. 79948;

West Union, *Whitmere* 248, July 6, 1896, M. B. G. Herb. No. 79947;

Winterset, *Carver*, date not given, M. B. G. Herb. No. 79924.

WISCONSIN:

LaCrosse, *Hale*, 1861, M. B. G. Herb. No. 75629;

Mirror Lake, *Eggerl*, August, 24, 1903, M. B. G. Herb. No. 82672;

Prairie du Chien, *Hale*, 1861, M. B. G. Herb. No. 75648;

St. Croix, *Hale*, M. B. G. Herb. No. 79956;

St. Croix, collector not given, but probably *Hale*, date not given, M. B. G. Herb. No. 79699.

MINNESOTA:

Detroit, *Seymour*, August 24, 1884, U. Ill. Herb.;

Lake Minnetonka, *Glatfelter*, October 3, 1898, M. B. G. Herb. No. 80089;

Sandy Lake, *Sandberg* 783, August 12, 1891, U. Ill. Herb.;

Spirit Lake, *Geyer*, September, 1838, M. B. G. Herb. No. 79685.

KANSAS:

Manhattan, *Norton*, September, 1893, M. B. G. Herb. No. 79926;

Manhattan, *Norton*, October 22, 1892, M. B. G. Herb. No. 79940;

Riley County, *Norton* 596, September 3, 1895, M. B. G. Herb. No. 79946.

NEBRASKA:

Along the Missouri to the Mountains, *Hayden*, July 8, 1854, M. B. G. Herb. No. 79681;

Fort Union, *Hayden*, 1855, M. B. G. Herb. No. 79684;

Fort Union, *Hayden*, date not given, M. B. G. Herb. No. 79964;

Nuckolls County, *Hedgcock* 348, July, 1886, M. B. G. Herb. No. 79807;

Nuckolls County, *Hedgcock*, July 3, 1899, M. B. G. Herb. No. 79806;

Omaha, *Eastman*, October 1, 1915, U. Ill. Herb.;

Thomas County, *Rydberg* 1762, September 13, 1893, U. Ill. Herb.

Without definite locality, *Hayden*, 1853-54, M. B. G. Herb. No. 82657.

DAKOTA:

Without definite locality, *Vasey*, 1888, M. B. G. Herb. No. 79912.

SOUTH DAKOTA:

Brookings, *White*, August 3, 1908, M. B. G. Herb. No. 79802;

Brookings, *White*, August 3, 1908, M. B. G. Herb. No. 79803.

NORTH DAKOTA:

Benson County, *Lunell*, August 5, 1906;

Benson County, *Lunell*, August 26, 1906, U. S. A. Herb.;

Fargo, *Seymour*, August 23, 1884, U. S. A. Herb.;

Grand Falls, *Brannon*, 52, July 1, 1886, M. B. G. Herb. No. 79905;

Lake Ibsen, *Lunell*, July 29, 1900, U. S. Herb. No. 746130.

ALABAMA:

Without definite locality, *Buckley*, date not given. M. B. G. Herb. No. 79955.

OKLAHOMA:

Snyder, *Eggert*, September 19, 1903, M. B. G. Herb. No. 82673;

Snyder, *Eggert*, September 18, 1903, M. B. G. Herb. No. 82674.

TEXAS:

Without definite locality, *Reverchon* 1677, October 25, 1874, M. B. G. Herb. No. 80108.

NEW MEXICO:

Animas Creek, *Metcalf*, 1142, July 13, 1904, M. G. B. Herb. No. 79801;

Animas Creek, *Metcalf*, 1142, July 13, 1904, M. B. G. Herb. No. 79824;

Dona Ana County, *Wooton* and *Standley* 3342, September 25, 1908;

Lucero's Ranch, *Ellis* 18, August 10, 1914, M. B. G. Herb. No. 760268;

Mesilla Park, *Standley*, September 29, 1906, M. B. G. Herb. No. 80103;

Picos, *Standley*, 4921, August 15, 1908, M. B. G. Herb. No. 79823;

River Mimbres, *Bigelow*, November 5, 1851, M. B. G. Herb. No. 79966;

Without definite locality, *Fendler*, 965, 1847, M. B. G. Herb. No. 79682;

Without definite locality, *Fendler*, 966, 1847, M. G. B. Herb. No. 79683;

Without definite locality, *Fuller*, date not given, M. B. G. Herb. No. 78953;

Without definite locality, *Wright* 1888, 1851-52, M. B. G. Herb. No. 79680.

COLORADO:

Black Cañon, *Baker* 686, August 11, 1901, M. B. G. Herb. No. 79918;

Boulder Cañon, *Daniels* 526, August 21, 1906, No. B. G. Herb. No. 80077;

Brighton, *Johnston* 389A, September 15, 1908, M. B. G. Herb. No. 80102;

Cañon City, *Brandegee* 3457, 1872, M. B. G. Herb. No. 79725;

Cañon City, *Brandegee* 970, 1874, M. B. G. Herb. No. 79724;

Colorado Springs, *Chase* 5279, August 28 to September 5, 1908, U. S. A. Herb.;

Deer Run, *Baker* 910, August 21, 1901, M. B. G. Herb. No. 79919;

Denver, *Holm* September 14, 1889, U. S. A. Herb.;

Denver, *Holm*, August 6, 1898, U. S. A. Herb.;

Denver, *Holm*, July 15, 1899, M. B. G. Herb. No. 778843;

Fort Collins, *Pammel*, June 29, 1896, M. B. G. Herb. No. 79952;

Fort Collins, collector not given, October 2, 1896, M. B. G. Herb. No. 79945;

Manitou, *Glatfelter*, September 9, 1905, M. B. G. Herb. No. 80087;

Manitou, *Glatfelter*, September 9, 1905, M. B. G. Herb. No. 80121;

Manitou, *Letterman*, August 11, 1884, M. B. G. Herb. No. 772774;

Mountain Valley, *Brandegee* 603, August, 1873, M. B. G. Herb. No. 79724;

Rocky Mountains, *Hall*, 1862, M. B. G. Herb. No. 79910.

WYOMING:

Sundance Mountain, *Chase* 5270, August 25, 1908, U. S. A. Herb.

MONTANA:

Billings, *Seymour*, September 4, 1884, U. S. A. Herb.

WASHINGTON:

Spokane County, *Suksdorf* 947, July 12, 1889, M. B. G. Herb.
No. 79959;

Without definite locality, *Tracy*, date not given, M. B. G. Herb.
No. 79916;

Without definite locality, collector and date not given, M. B. G.
Herb. No. 79928.

ARIZONA:

Nagle's Ranch, *Jones* 6056, September 20, 1894, M. B. G.
Herb. No. 80073;

St. John's, *Griffiths* 5182, August 9, 1903, U. S. A. Herb.

NEVADA:

Humboldt Pass, *Watson* 1288, September, 1868, M. B. G.
Herb. No. 79613.

UTAH:

Without definite locality, *Jones* 6033, 1894, M. B. G. Herb.
No. 79942.

7. MUHLENBERGIA COMMUTATA (Scribner) Bush, n. sp.

Muhlenbergia Mexicana commutata Scribner. *Rhodora* 9:
18. 1907.

"Panicles much longer and larger than those of *M. MEXICANA*;
lemmas awned; awns 4-10 mm. long; otherwise much as in *M.*
Mexicana."

New York, Delaware, Pennsylvania, Illinois and Minnesota,
Scribner, l. c.

Vermont and New York to South Dakota, south to Virginia,
Nebraska, Missouri and Oklahoma.

SPECIMENS EXAMINED:

VERMONT:

Rutland, *Kirk*, 974, September 9, 1913, U. S. Herb. No.
725390.

NEW YORK:

Fulton, *Rowlee*, August, 1888, M. B. G. Herb. No. 79739;
Oxford, *Coville*, August 29, 1884, U. S. Herb. No. 295258.

ONTARIO:

Gault, *Herriot*, 80, August 31, 1901, U. S. Herb. No. 952416;
Pelee Point, *Macoun* 26245, August 5, 1901, U. S. Herb. No.
952415.

NEW JERSEY:

Hoboken, collector and date not given, U. S. Herb. No. 746217.

PENNSYLVANIA:

Easton, *Garber*, 1890, U. S. Herb. No. 265677;

Susquehanna, *Kneucker* 315, August, 1901, U. S. Herb. No. 587196;

Susquehanna, *Porter*, August 8, 1895, U. S. Herb. No. 952387;

Susquehanna, *Kneucker* 315, August, 1901, M. B. G. Herb. No. 79740.

VIRGINIA:

Bedford County, *Curtiss*, September, 1873, U. S. Herb. No. 746218;

Bedford County, *Curtiss*, September, 1873, M. B. G. Herb. No. 79727.

ILLINOIS:

Peoria, *McDonald*, September, 1900, U. S. Herb. No. 746214;

Wady Petra, *Chase*, 1540, August 4, 1907, U. S. Herb. No. 645418;

Without definite locality, *Wolf*, 1882, U. S. Herb. No. 952377.

MISSOURI:

Gates, *Standley*, 9382, August 26, 1912, U. S. Herb. No. 688298, in part, the plant marked B on this sheet;

Whiteside, *Davis*, 1030, September 11, 1911, U. S. Herb. No. 673932.

MICHIGAN:

South Lockwood, *Dodge* 17, October 2, 1911, U. S. Herb. No. 952373.

IOWA:

Iowa Lake, *Beatty*, August 27, 1897, M. B. G. Herb. No. 75587;

Johnson County, *Snyder*, September, 1886, M. B. G. Herb. No. 75604.

Mount Pleasant, *Mills* 860, August, 1897, U. S. Herb. No. 328112.

MINNESOTA:

Fort Snelling, *Mearns* 749, September 1, 1891, U. S. Herb. No. 952392.

NEBRASKA:

Weeping Water, *Williams*, date not given, U. S. Herb. No. 952390.

SOUTH DAKOTA:

Iroquois, collector not given, August 15, 1874, M. B. G. Herb.

No. 79708;

Tacoma Park, *Griffiths* 780, September 11, 1897, U. S. Herb.

No. 79708;

Tacoma Park, *Griffiths* 780, September 11, 1897, U. S. Herb.

No. 952394.

OKLAHOMA:

Verdigris, *Bush* 770, August 2, 1894, M. B. G. Herb. No.

79633;

Verdigris, *Bush* 771, October 5, 1894, M. B. G. Herb. No.

79632.

8. MUHLENBURGIA GLABIFLORA Scribner, *Rhodora* 9: 22. 1917.

Culms terete, very minutely scabrous for a short distance below the nodes; panicles 2-6 cm. long, occasionally somewhat glomerate, the closely flowered short branches appressed, usually partly enclosed in the subtending leaf-sheaths; spikelets ovate-lanceolate; glumes lanceolate, acute or acuminate-pointed, subequal, a little shorter than, as long as, or a little longer than the lemma, scabrous on the keel excepting near the base; lemmas ovate or oblong, obtuse or submucronate-pointed, scabrous on the heel and lateral nerves above, otherwise smooth, no hair at the base; palea ovate-oblong, obtuse, equalling or a little shorter than the lemma.

Pennsylvania and Maryland, west to Illinois, Missouri and Texas
SPECIMENS EXAMINED:

PENNSYLVANIA:

Wissahickan Creek, *Smith* 84, August, U. S. Herb. No. 952386

MARYLAND:

Hyattsville, *Scribner*, 1888, U. S. Herb. No. 746131.

ILLINOIS:

Mascoutah, *Welsch*, 1862-1871, U. S. A. Herb.;

Taylorville, *Andrews*, September 10, 1898, U. S. A. Herb.

MISSOURI:

St. Louis, *Engelmann*, 1842, M. B. G. Herb. No. 79662.

9. MUHLENBURGIA MEXICANA (L.) Trin. Gram. Unifl. 189.
1824.

Agrostis Mexicana L. Mant. 1: 31. 1767.

Agrostis lateriflora Michx. Fl. Bor. Am. 1: 53. 1803.

Agrostis clandestina Sprengel, Mont. 1: 32. 1807.

Cinna Mexicana (L.) Beauv. Agrost. 32. 158. 1812.

Trichochloa Mexicana (L.) Grin. Fund. Agrost. 117. 1820.
Muhlenbergia clandestina (Spreng.) Trin. Gram. Unifl. 190.
 1824.

Muhlenbergia polystachya Scribner, l. c. 1907, not of Mackenzie and Bush, 1902.

Muhlenbergia polystachya Hitchcock, Gray's New Manual, ed. 7. 127. 1908, not M. & B.

Muhlenbergia foliosa Nash, Britton and Brown, Illustrated Flora, 2nd ed. 185. 1913, not *M. foliosa* Trin. 1824.

Muhlenbergia Mexicana Trin., Bush in Flora of Jackson County Missouri, No. 862, 1885; Tracy in Flora of Missouri, No. 1642, 1886; Eggert in Catalogue of Plants of St. Louis, Missouri, 1891.

Muhlenbergia Mexicana (L.) Trin., Mackenzie and Bush in Manual of the Flora of Jackson County, Missouri, No. 2, 1902, Palmer in Catalogue of Plants of Jasper County, Missouri, Nos. 1388, 2686, 2797, 3463, 3467 and 3475, 1916.

Muhlenbergia Mexicana filiformis Vasey, Bush in Flora of Jackson County, Missouri, No. 863. 1885.

Muhlenbergia Mexicana filiformis Gray. Eggert in Catalogue of Plants of Saint Louis, Missouri, 1891.

Muhlenbergia Mexicana filiformis Muhl., Tracy in Flora of Missouri, No. 1644, 1886.

N. B. to Ont. S. Dak. and southward, Hitchcock in Manual.

N. B. to W. Ont., N. Car., Tenn., Nebr. and the Ind. Terr., Nash in Flora.

N. B. to Wyo., S. Dak., N. Car., and Texas, Nash in Illustrated Flora.

Massachusetts to North Dakota, south to Alabama and north-eastern Texas.

SPECIMENS EXAMINED:

MASSACHUSETTS:

Granville, Seymour 2, September 15, 1913, M. B. G. Herb. No. 746678;

Norquit, Sturtevant, August 31, 1888, M. B. G. Herb. No. 75588;

South Warmington, Sturtevant September 11, 1890, M. B. G. Herb. No. 75577;

South Warmington, Sturtevant, September 11, 1890, M. B. G. Herb. No. 75576;

South Warmington, *Sturtevant*, September 17, 1890, M. B. G.

Herb. No. 75575;

Walpole, *Greenman*, 3236, September 26, 1897, M. B. G.

Herb. No. 742290.

CONNECTICUT:

South Canaan, *Greenman* 3229, October 3, 1897, M. B. G.

Herb. No. 742285.

Irvin Lakes, *Greenman* 2453, September 25, 1910, M. B. G.

Herb. No. 738434.

NEW YORK:

Bergen, collector not given, August 30, 1915, U. S. A. Herb.;

Buffalo, *Clinton* 9272, date not given, M. B. G. Herb. No.

75572;

Ithaca, *Pearce*, October 6, 1883, U. S. Herb. No. 52897;

Ithaca, *Treleare*, August 19, 1878, M. B. G. Herb. No. 75605;

Lebanon Springs, *Harrison*, September 25, 1890, U. S. Herb.

No. 952387;

New York, *Coville*, September 24, 1884, U. S. Herb. No.

295257;

New York, *Gerard*, 1882, U. S. Herb. No. 952388;

Western New York, *Gray*, date not given, M. B. G. Herb. No.

75626.

ONTARIO:

Fredericktown, *Fowler*, 1878, U. S. Herb. No. 259605;

Gault, *Herriott* 81, August 31, 1901, U. S. Herb. No. 952412.

NEW JERSEY:

Sussex County, *Mackenzie* 2434, October 16, 1906, M. B. G.

Herb. No. 75668.

DELAWARE:

Centreville, *Commons*, October 5, 1873, M. B. G. Herb. No.

75570.

PENNSYLVANIA:

Easton, *Porter*, September 2, 1895, U. S. Herb. No. 952385;

Germantown, *Scribner*, September 28, 1875, U. S. Herb. No.

746128;

Graeff's Landing, *Heller* 4815, September 14, 1901, U. S. Herb.

No. 4406273;

Graeff's Landing, *Heller*, September 14, 1901, M. B. G. Herb.

No. 75642;

- Lancaster, *Heller* 4819, September 12, 1900, U. S. Herb. No. 406277;
Lancaster, *Small*, date not given, U. S. Herb. No. 746125;
Lancaster, *Small*, May, 1891, U. S. Herb. No. 298410;
Mountville, *Eby*, July 8, 1891, M. B. G. Herb. No. 75633;
Philadelphia, *Digyn*, date not given, M. B. G. Herb. No. 79975;
Philadelphia, *Scribner* 105, September, 1875, U. S. Herb. No. 746128;
Westchester, *Deane*, date not given, U. S. Herb. No. 746116;
Westchester, *Deane*, 1827, M. B. G. Herb. No. 82681;
Williamsport, *McMinn*, 1867, U. S. Herb. No. 952384.

MARYLAND:

- Chevy Chase, *Mosher*, September 15, 1915, U. S. A. Herb.;
Great Falls of the Potomac, *Ball* 73, September 4, 1899,
U. S. Herb. No. 952406;
Great Falls of the Potomac, *Ball* 73, September 4, 1898,
M. B. G. Herb. No. 75589.

DISTRICT OF COLUMBIA:

- Deanewood, *Chase* 3006 1-2, September 9, 1905, U. S. Herb.
No. 746115;
Deanewood, *Chase* 3006 1-2, September 9, 1905, U. S. A. Herb.
High Island, *Dewey* 121, September 7, 1894, U. S. Herb. No.
491691;
High Island, *Dewey* 121, September 7, 1894, U. S. Herb. No.
490690;
Hyattsville, *Holm*, September 18, 1897, M. B. G. Herb. No.
779206;
Long Bridge, *Blanchard*, September 28, 1891, U. S. Herb.
No. 311999;
Mount Pleasant, *Chase* 279, September 7, 1905, U. S. Herb.
No. 952405;
Potomac Flats, *Ball* 712, October 20, 1906, M. B. G. Herb. No.
952407;
Washington, *Wheeler*, September 20, 1906, U. S. Herb. No.
952404.

OHIO:

- Athens, *Ball*, September 21, 1902, U. S. Herb. No. 952382;
Central Ohio, *Sullivant*, date not given, M. G. G. Herb. No.
75624;

- Cincinnati, *Lloyd* 574, September 16, 1890, M. B. G. Herb. No. 75624;
Cleveland, *Greenman* 3249, July 29, 1896, M. B. G. Herb. No. 742082;
Liverpool, *Holm*, September 18, 1912, U. S. A. Herb.;
London, *Sharp* 6790, September, October, U. S. Herb. No. 952383;
Sheffield, *Ricksecker* 203, September 25, 1901, U. S. Herb. No. 217632;
St. Marys, *Kneucker* 203, September 25, 1901, U. S. Herb. No. 557160;
St. Marys, *Kneucker* 203, September 25, 1901, M. B. G. Herb. No. 75582.

VIRGINIA:

- Waterloo, *Pollard* 757, October 18, 1895, U. S. Herb. No. 307244;
Without definite locality, *Pech*, date not given, U. S. Herb. No. 952408.

WEST VIRGINIA:

- Aurora, *Steele* and *Steele*, August 30, 1898, U. S. Herb. No. 359404;
Goose Creek, *Donnell-Smith*, September 8, 1879, U. S. Herb. No. 490294;
Sweet Springs, *Steele* and *Steele* 317, September 15, 1903, M. B. G. Herb. No. 75583;
Sweet Springs, *Steele* and *Steele* 317, September 15, 1898, U. S. Herb. No. 490294.

INDIANA:

- Clark County, collector and date not given, U. S. Herb. No. 722787;
Lafayette, *Dorner* 222, September 15, 1901, U. S. Herb. No. 952381;
Russellville, *Grimes* 790, September 11, 1911, U. S. Herb. No. 952380;
Wells County, *Deam*, September 12, 1897.

TENNESSEE:

- Knoxville, *Ruth* 807, June, 1888, M. B. G. Herb. No. 75567.

KENTUCKY:

- Bell County, *Kearney* 366, September, 1893, U. S. Herb. No. 952418;

- Bell County, *Kearney* 366, September, 1893, U. S. Herb. No. 746132;
Bell County, *Kearney* 366, September, 1893, U. S. Herb. No. 822929;
Wasiota, *Kearney* 366, September, 1883, M. B. G. Herb. No. 75631;
Without definite locality, *Short*, 1840, M. B. G. Herb. No. 75607.

ILLINOIS:

- Kankakee, *Crampton* 547, September 11, 1913, U. S. Herb. No. 750683;
Mascontah, *Welsch*, 1867-1871, U. S. A. Herb.;
Mount Carmel, *Schneck*, 1879, U. S. Herb. No. 952373;
Mount Carmel, *Schneck*, October, 1879, U. S. A. Herb.;
Mount Carmel, *Schneck*, September 25, 1881, U. S. A. Herb.;
Mount Carmel, *Schneck*, September 8, 1879, U. S. A. Herb.;
Peoria, *Brendel*, date not given, U. S. A. Herb.;
Taylorville, *Andrews*, August 2, 1888, U. S. A. Herb.;
Taylorville, *Andrews*, September 12, 1858, U. S. A. Herb.;
Urbana, *Gates*, October 6, 1907, U. S. Herb. No. 645175;
Urbana, *Gibbs*, September 26, 1898, U. S. A. Herb.;
Urbana, *Gibbs* September 27, 1888, U. S. A. Herb.;
Wabash County, *Schneck*, September 18, 1880, U. S. A. Herb.;
Wabash County *Schneck*, September 18, 1880. U. S. Herb. No. 746117;
Wady Petra, *Chase* 200, August 31, 1888, U. S. Herb. No. 746123;
Wady Petra, *Chase* 200, August 31, 1888, U. S. Herb. No. 952378;
Wady Petra, *Chase* 1166, September 25, 1904, U. S. Herb. No. 952373;
Wady Petra, *Chase* 1166, September 25, 1904, U. S. Herb. No. 580931;
Wady Petra, *Chase* 1267, September 23, 1806, U. S. Herb. No. 952374;
Without definite locality, *Engelmann*, August, 1883, M. B. G. Herb. No. 79660, the plant marked 1 on this sheet, but I can not be sure that the label cited belongs to the plant marked 1.

MISSOURI:

- Aberden, *Davis* 963, September 11, 1911, M. B. G. Herb. No. 709401;
Aberden, *Davis* September 24, 1911, M. B. G. Herb. No. 709375;
Allenton, *Letterman*, August, 1879, M. B. G. Herb. No. 772776;
Clarksville, *Davis* 1117, September 24, 1911, U. S. Herb. No. 673972;
Clarksville, *Davis*, September 24, 1911, M. B. G. Herb. No. 709316;
Clay County, *Mackenzie* 790, September 21, 1895, M. B. G. Herb. No. 75677;
Clay County, *Mackenzie* 945, September 21, 1895;
Courtney, *Bush* 1154, September 10, 1901, M. B. G. Herb. No. 75568;
Creve Coeur Lake, *Glatfelter* September 11, 1894, M. B. G. Herb. No. 75654;
Creve Coeur Lake, *Glatfelter*, September 17, 1900, M. B. G. Herb. No. 75655;
Creve Coeur Lake, *Kellogg* 29, September 25, 1901, U. S. Herb. No. 950197;
Dodson, *Hoffman* September 10, 1916;
Dodson, *Hoffman* September 10, 1916;
Dodson, *Mackenzie*, May 8, 1875, M. B. G. Herb. No. 75676;
Forest Park, *Glatfelter* 613, September 20, 1891, M. B. G. Herb. No. 75653;
Forest Park, *Glatfelter* 643, September 20, 1891, M. B. G. Herb. No. 75651;
Gates, *Standley* 9382, August 26, 1912, U. S. Herb. No. 688288, in part, the plant marked A on this sheet;
Hannibal, *Davis* 1106, September 19, 1911, M. B. G. Herb. No. 709121;
Hannibal, *Davis* 1106, September 19, 1911, U. S. Herb. No. 673964;
Hannibal, *Davis* 1410, October 18, 1911, M. B. G. Herb. No. 708745;
Jackson County, *Bush* 1726, September 14, 1890, M. B. G. Herb. No. 75673;

- Jackson County, *Bush* 1880, September 14, 1890, M. B. G. Herb. No. 75675;
Jackson County *Bush* September 27, 1893, M. B. G. Herb. No. 75678;
Jasper, *Palmer* 1388, September 12, 1909, M. B. G. Herb. No. 75670;
Jasper, *Palmer* 1388, September 12, 1909, M. B. G. Herb. No. 756904;
Jefferson Barracks, *Eggert* September 4, 1877, M. B. B. Herb. No. 739682;
Jefferson Barracks, *Eggert*, September 4, 1897, M. B. G. Herb. No. 75658;
Jefferson Barracks, *Eggert* September 4, 1877, M. B. G. Herb. No. 739940;
Kansas City, *Stigall* 49, October 20, 1902, M. B. G. Herb. No. 75672;
Lee's Summit, *Mackenzie* 419, September 9, 1901;
McDonald County, *Bush*, September 1, 1893, M. B. G. Herb. No. 75672;
Oakwood, *Davis* 130, October 6, 1911, M. B. G. Herb. No. 756896;
Scotland, *Palmer* 2686, September 12, 1909, M. B. G. Herb. No. 75652;
Scotland, *Palmer* 2686, September 12, 1909, M. B. G. Herb. No. 757605;
Shannon County, *Bush*, October 21, 1893, M. B. G. Herb. No. 75671;
Shannon County, *Bush*, October 21, 1893, M. B. G. Herb. No. 75673;
Sheffield, *Mackenzie* 563, October 18, 1901;
Sibley, *Mackenzie* 563, October 2, 1901;
Springfield, *Weller* 53, September 13, 1890, U. S. Herb. No. 950196;
St. Louis, *Eggert* 223a, October 7, 1897, U. S. Herb. No. 950195;
St. Louis, *Pammel*, October, 1886, M. B. G. Herb. No. 79335;
St. Louis County, *Eggert*, September 11, 1897, M. B. G. Herb. No. 75640;
St. Louis County, *Eggert*, September 11, 1877, M. B. G. Herb. No. 739939;

- St. Louis County, *Eggert*, September 11, 1877, M. B. G. Herb.
No. 739388;
St. Louis County, *Eggert*, September 11, 1877, M. B. G. Herb.
No. 75657;
St. Louis County, *Eggert*, September 11, 1877, M. B. G. Herb.
No. 75641;
Swan, *Bush* 460, September 24, 1899, M. B. G. Herb. No.
75574;
Slope Park, *Mackenzie* 437, September 13, 1901;
Turner, *Standley* 9851, September 5, 1912, U. S. Herb. No.
688766;
Webb City, *Palmer* 2797, September 29, 1909, M. B. G. Herb.
No. 75656;
Webb City, *Palmer* 2757, September 29, 1909, M. B. G. Herb.
No. 756902;
Webb City, *Palmer* 3463, September 17, 1911, U. S. A. Herb.;
Webb City, *Palmer* 3463, September 17, 1911, M. B. G. Herb.
No. 709108;
Webb City, *Palmer* 3463, September 17, 1911, M. B. G. Herb.
No. 756899;
Webb City, *Palmer* 3463, September 17, 1911, M. B. G. Herb.
No. 709021;
Webb City, *Palmer* 3463, September 17, 1911, M. B. G. Herb.
No. 756900;
Webb City, *Palmer* 3475, September 17, 1911, M. B. G. Herb.
No. 709006;
Webb City, *Palmer* 3475, September 17, 1911, M. B. G. Herb.
No. 756903;
Webb City, *Palmer* 3475, September 17, 1911, M. B. G. Herb.
No. 756901;
Whiteside, *Davis* 1030, September 11, 1911, M. B. G. Herb.
No. 709077;
Whiteside, *Davis* 1010, September 11, 1911, M. B. G. Herb.
No. 709228;
Whiteside, *Davis* 1011, September 11, 1911, U. S. A. Herb.;
Whiteside, *Davis* 1030, September 11, 1911, U. S. Herb. No.
673932;
Whiteside, *Davis* 1011, September 11, 1911, U. S. Herb. No.
673925;

Without definite locality, collector not given, August, 1881,
M. B. G. Herb. No. 75625.

NORTH CAROLINA:

Biltmore, *Biltmore Herbarium* 657b, September 12, 1898,
M. B. G. Herb. No. 75603;

Biltmore, *Biltmore Herbarium* 657b, September 12, 1898, U. S.
Herb. No. 335376;

Magnetic City, *Wetherby* 24, September 20, 1895, U. S. Herb.
No. 952410;

Mountains of North Carolina, *Boynton*, 1888, U. S. Herb.
No. 852411;

Without definite locality, *Boynton*, date not given, U. S. Herb.
No. 746129.

IOWA:

Amana, *Schadt* 657, September 21, 1897, M. B. G. Herb. No.
75601;

Carroll, *Simon* 1018, September 21, 1897, M. B. G. Herb. No.
75635;

Chariton, *Mallory* 799, October 2, 1897, U. S. Herb. No.
75634;

Dakota City, *Pammel* 211, August 8, 1896, M. B. G. Herb.
No. 79615;

De Witt, *Pammel* 1451, September 9, 1898, M. B. G. Herb. No.
75593;

Dixon, *Snyder* 734, September 21, 1897, M. B. G. Herb. No.
75602;

Iowa City, *Hitchcock*, 1889, M. B. G. Herb. No. 75584;

Iowa City, *Hitchcock*, date not given, M. B. G. Herb. No.
75622;

Iowa City, *Hitchcock*, date not given, U. S. Herb. No. 733277;

Iowa City, *Somes* 3868, September 9, 1909, U. S. Herb. No.
672490;

Mount Ayr, *Beard* 638, September 25, 1897, M. B. G. Herb.
No. 75595;

Mount Pleasant, *Mills*, 1894, M. B. G. Herb. No. 75620;

Mount Pleasant, *Mills*, 1894, U. S. Herb. No. 952397;

Mount Pleasant, *Mills*, 1894, M. B. G. Herb. No. 75598;

Mount Pleasant, *Mills*, 1894, U. S. Herb. No. 952397;

Mount Pleasant, *Mills*, 1894, U. S. Herb. No. 952398;

Mount Pleasant, *Mills*, 1894, U. S. Herb. No. 952399;

- Mount Pleasant, *Mills* 17, 1894, M. B. G. Herb. No. 75599;
Mount Pleasant, *Mills* 17, 1894, M. B. G. Herb. No. 75597;
Mount Pleasant, *Mills* 860, 1897;
Mount Pleasant, *Mills* 860, August, 1897, M. B. G. Herb.
No. 75596;
Mount Pleasant, *Mills* 860, August, 1897, M. B. G. Herb.
No. 75600;
Mount Pleasant, *Mills* 860, August, 1897, M. B. G. Herb.
No. 75600;
Mount Pleasant, *Mills* 860, August, 1897, M. B. G. Herb. No.
75663;
Muscatine, *Reppert*, September 6, 1887, M. B. G. Herb. No.
75616;
Sheldahl and Slatér, *Pammel* 1465, September 17, 1898,
M. B. G. Herb. No. 75591;
Turin, *Pammel*, September 8, 1894, U. S. Herb. No. 746124.

MINNESOTA:

- Detroit, *Seymour*, August 22, 1884, U. S. A. Herb.;
Fort Snelling, *Mearns* 771, August 31, 1891, U. S. Herb. No.
952391;
Houston County, *Freiburg*, July, 1912, M. B. G. Herb. No.
763870;
St. Cloud, *Campbell* 1877, U. S. Herb. No. 952393.

KANSAS:

- Cullison, *Norris* 218, September, 1887, M. B. G. Herb. No.
79833;
Manhattan, *Hitchcock* 3836, September 27, 1908, U. S. A. Herb.
No. 952402;
Manhattan, *Hitchcock* 3836, September 27, 1908, U. S. A. Herb.
Manhattan, *Hitchcock* 3844, September 27, 1908, U. S. Herb.
No. 952403;
Manhattan, *Norton*, October 11, 1892, M. B. G. Herb. No.
75608;
Manhattan, *Novigh*, October 2, 1887, M. B. G. Herb. No.
75609;
McFarland, *Hitchcock* 7831, October 17, 1910, U. S. Herb.
No. 952400;
Riley County, *Norton* 592a, September 9, 1895, M. B. G. Herb.
No. 75614;

Riley County, *Norton* 597a, September 9, 1895, U. S. Herb. No. 353373;

Rockport, *Bartholomew*, September 12, 1889, M. B. G. Herb. No. 4767491.

NEBRASKA:

Omaha, *Eastman*, September 14, 1915, U. S. A. Herb.

SOUTH DAKOTA:

Oak Lake, *Griffiths* and *Schlosser* August, 1892, U. S. Herb. No. 210915;

Pearl Creek, *Thorner*, August 15, 1894, M. B. G. Herb. No. 75659;

Sioux Falls, *Thorner* August, 1882, M. B. G. Herb. No. 75632;

Trent, *Ball* and *Ball*, September 26, 1903, U. S. Herb. No. 952395.

NORTH DAKOTA:

Fargo, *Waldron*; August 14, 1890, U. S. Herb. No. 952396;

Fargo, *Waldron* and *Moons*, August 20, 1901, U. S. Herb. No. 406356;

Pembina, *Havard* 3, date not given, U. S. Herb. No. 152896.

ALABAMA:

Without definite locality, *Buckley*, September, 1841, M. B. G. Herb. No. 79664.

ARKANSAS:

Fulton, *Bush* 980, September 19, 1900, M. B. G. Herb. No. 75588.

OKLAHOMA:

Ottawa, *Stevens* 2458, August 27, 1913, U. S. A. Herb.;

Sapulpa, *Bush* 772, September 21, 1894, M. B. G. Herb. No. 75610;

Sapulpa, *Bush* 1396, September 27, 1895, M. B. G. Herb. No. 75612;

Stillwater, *Waugh*, September 6, 1893, M. B. G. Herb. No. 75611;

Stillwater, *Waugh* 2146, September 27, 1893, M. B. G. Herb. No. 75613.

TEXAS:

Dallas, *Reverchon* 1054, October 1880, U. S. Herb. No. 822932, labelled *M. MEXICANA FILIFORMIS* by Reverchon, and *M. FOLIOSA AMBIGUA* by Hitchcock.

- Dallas, *Reverchon* 2330, date not given, M. B. G. Herb. No. 82679;
 Dallas, *Reverchon* 2330, date not given, M. B. G. Herb. No. 75538;
 Dallas, *Reverchon* 2330, date not given, M. B. G. Herb. No. 75568;
 Granbury, *Reverchon* 4110, September 7, 1903, M. B. G. Herb. No. 75664;
 Without definite locality, *Reverchon* 1054, date not given, M. B. G. Herb. No. 75661.
10. MUHLENBERGIA FOLIOSA Trin. Gram. Unifl. 190. 1824.
Agrostis filiformis Willd. Enum. Hort. Berol. 1: 95. 1809,
Agrostis filiformis Sprengel 1802.
Agrostis foliosa hortulana R. & S. 2: 373. 1817.
Agrostis filiformis Muhl. Gram. 66. 1817, not *Agrostis filiformis* Sprengel 1802.
Trichochloa Coliosa Trin. Fund. Agrost. 117. 1820.
Cinna filiformis (Willd.) Link, Enum. Mort. Berol. 1: 70. 1821.
Agrostis lateriflora filiformis (Willd.) Torr. Fl. 1: 86. 1824.
Muhlenbergia Mexicana filiformis (Willd.) Scribner, Mem. Torr. Club 5: 36. 1894.
Muhlenbergia Mexicana of American authors in large part, not Trinius 1824.
Muhlenbergia Mexicana Nash in part in Illustrated Flora, not of Trinius 1824.
Muhlenbergia ambigua Hitchcock in part in Manual, not M. AMBIGUA Torrey 1843.
 Me. to Ont. S. Dak. and southward, Hitchcock in Manual.
 Not recognized by Nash in Flora.
 Not recognized by Nash in Illustrated Flora.
 Maine and Quebec, westward to North Dakota and Wyoming, southward to North Carolina and Arizona.
- SPECIMENS EXAMINED:
- MAINE:
 Auburn, Merrill 13, August, 1898, U. S. Herb. No. 952483;
 Bangor, Knight 3, August 7, 1904, U. S. Herb. No. 952474;
 Bradley, Briggs 10, September, 1891, U. S. Herb. No. 952479;
 Brownfield, Merrill 18, August 24, 1896, U. S. Herb. No. 952484;

- Cumberland, *Chamberlain* 453, September 6, 1902, U. S. Herb. No. 746194;
Dover, *Fernald* 526, September, 1891, U. S. Herb. No. 952480;
Foxcraft, *Fernald* 523, September 5, 1894, U. S. Herb. No. 952482;
Foxcraft, *Fernald* 523, September 5, 1894, U. S. Herb. No. 952482;
Madison, *Fernald* 529, August 1, 1892, U. S. Herb. No. 952481;
Orono, *Fernald* 524 September 13, 1890, U. S. Herb. No. 952473;
Orono, *Harvey and Harvey* 1270, June 1890, U. S. Herb. No. 952511;
St. Francis, *Fernald* 170, August 18, 1893, M. B. G. Herb. No. 75630;
St. Francis, *Fernald* 170, August 18, 1893, U. S. Herb. No. 204116;
St. Francis, *Fernald* 170, August 18, 1893, U. S. Herb. No. 822926.

QUEBEC:

- Montreal, *Mohr*, August 10, 1883, U. S. Herb. No. 722799.

NEW HAMPSHIRE:

- Manchester, *Batchelder* September 25, 1910, U. S. Herb. No. 952476;
Peterboro, *Deane and Batchelder*, August 30, 1910, U. S. Herb. No. 952476;
Peterboro, *Deane and Batchelder*, August 30, 1910, U. S. Herb. No. 952477;
Wolfsborough, *Conant*, September, 1881, U. S. Herb. No. 952475.

VERMONT:

- Burlington, *Jones* 1678, September 8, 1892, U. S. Herb. No. 647813;
Rutland, *Kirk* 1032, August 15, 1913, U. S. Herb. No. 725801;
Rutland, *Kirk* 1033, August 15, 1913, U. S. Herb. No. 725802.

MASSACHUSETTS:

- Essex County, *Conant*, 1879, U. S. Herb. No. 952472;
Framingham, *Smith*, September, 1894, M. B. G. Herb. No. 79914;
South Hadley, *Cook*, 1887, U. S. Herb. No. 277074;

Southampton, collector and date not given, M. B. G. Herb.

No. 785517.

RHODE ISLAND:

Limestone Rock, *Greenman* 2528, October 2, 1910, M. B. G.

Herb. No. 740428.

Providence, *Olney* September, U. S. Herb. No. 852471.

NEW YORK:

Hinckley, *Mabeur* 3348, August 7, 1911, U. S. Herb. No.

952469;

Ithaca, collector not given, October 26, 1892, M. B. G. Herb.

No. 75643;

Ithaca, collector not given, August 25, 1893, M. B. G. Herb.

No. 75644;

Ithaca, *Rowles*, September 4, 1894, U. S. Herb. No. 952468;

Lake George, *Vasey* 1882, U. S. Herb. No. 952452;

Lebanon Springs, *Harrison*, September 19, 1890, U. S. Herb.

No. 952470;

Oxford, *Coville*, September 11, 1885, U. S. Herb. No. 295252;

Pennyan, collector and date not given, but probably *Sartwell*,

M. B. G. Herb. No. 75606;

Wayne County, *Mankensen*, October 8, 1869, U. S. Herb. No.

822927;

Western New York, *Gray*, date not given, M. B. G. Herb. No.

75643;

Western New York, *Gray*, date not given, M. B. G. Herb. No.

75623;

Western New York, *Gray*, date not given, M. B. G. Herb. No.

75627.

CANADA:

Without definite locality, *Shepard* date not given, M. B. G.

Herb. No. 75628.

ONTARIO:

Birch Island, *Macoun* 26246, U. S. Herb. No. 952486;

Gault, *Herriott* 83, September 6, 1901, U. S. Herb. No. 952490;

Gault, *Merriott*, September 5, 1898, U. S. Herb. No. 952489;

Johnstone's Harbor, *Macoun* 26248, U. S. Herb. No. 952487;

Point Edward, *Macoun* 26247, U. S. Herb. No. 952485;

Point Pelee, *Dodge* 19, September 17, 1911, U. S. Herb. No.

952491;

Rockcliffe, *Macoun* 86177, August 10, 1911, M. B. G. Herb.

No. 744523.

Our Flycatchers.

BY BROTHER ALPHONSUS, C. S. C.

WOOD PEWEE.

Myiochanes virens

Our commonest flycatcher is the Wood Pewee. Although it is found in greater abundance in woods and groves, yet the bird may also be heard in the shade trees on the streets of our smaller cities. No other flycatcher has so musical a note as the Pewee. All day long through spring and summer its silvery song may be enjoyed by the bird lover. This species arrives here after the middle of May and remains until late in September. During this month the song gradually ceases. The nest of the Pewee, which is saddled on a limb of any kind of tree, may not be easily seen. The structure is small and almost looks like a protuberance on the branch where it is placed. But a keen and practised eye will note the nest, which will soon be visited by the mother bird. After the young are fledged they make themselves conspicuous by their querulous disposition, often darting after one another with great pugnacity. In flycatching the Pewee is fearless and graceful, sometimes passing within a few feet of a pedestrian. The presence of this interesting species is one of the notable features of our lawns and parks.

PHOEBE.

Sayornis phoebe

This flycatcher is common in some localities, and very rare or entirely absent in others. It is hard to explain this rarity or absence; for even when suitable nesting-places, like grottoes, are available, still the bird may avoid a certain territory during most of the spring and summer. In early spring, usually in the latter part of March, the first Phoebes appear, and they may be seen for several weeks afterward. The Phoebe is always the first of the fly catchers to arrive in spring and the last to leave in autumn. As already intimated this species builds its nest under some kind of shelter, like an outhouse or a bridge. Two broods are raised in the same nest, which is always lined with moss. The note of the Phoebe is less musical than the Pewee's; the bird is also less active and graceful in flight. Another characteristic difference between these two species is found in the fact that the Phoebe moves its tail while the bird is perched on a wire or a branch, but the Pewee never

indulges in this flirtation. The Phoebe is slightly larger than the Pewee, and not so pleasing in appearance. The large black head of the Phoebe mars its form much.

CRESTED FLYCATCHER.

Myiarchus crinitus

This large and beautiful flycatcher is less common than is the Pewee or the Phoebe. The crest, yellow underparts, and chestnut-colored tail give the bird a striking appearance. It is mostly an inhabitant of the woods, and rarely nests in orchards. After the nesting-season the young birds and old ones move about seeking for food. Occasionally they may wander away from their habitat in the deep woods. Then their loud and rather weird-sounding note may be heard in some smaller grove or orchard. However, this species is most easily seen and heard early in May when it first arrives from the South, and before it enters into the deep woods to nest. It is partial to the tree tops, only descending when the lure of its prey brings it to a lower plane. On such occasions the bird may be seen to advantage, and its handsome appearance will challenge the admiration of the observer.

ALDER FLYCATCHER.

Empidonex trailli alnorum

As its name indicates, this species is partial to marshy land, although some individuals prefer high places. I have known an Alder Flycatcher to nest for two seasons in a thick growth of mulberries at the edge of an orchard. I think, too, that such cases are not rare, for I have frequently heard the notes of this flycatcher in thick growths along road-sides. However, to find these birds in abundance you must visit a piece of lowland, where their characteristic note is constantly uttered.

KINGBIRD.

Tyrannus tyrannus.

Perhaps this flycatcher is better known than any other members of the family. Its habits are such as to attract more attention, while its large size and neat appearance also make the bird conspicuous. Of a general slate color, with a black head, white underparts, and the tail with a white band, the Kingbird is truly a handsome species. Usually the bird shows a preference for wires for perching places. Here it will dart out after insects, or make a sudden sally at any other passing bird. This habit of attacking birds, large or

small, has gained for the species the name, Kingbird. According to some farmers the bee-martin, another of the Kingbird's names, is destructive of the life of bees. This is an over-statement of the case, however, for the number of bees taken by any Kingbird is comparatively small, and not sufficient to warrant shooting the birds. Like all of the flycatchers, the Kingbird bathes by dipping into the water. As it flies over the surface of a lake, the bird may dip several times, or it may fly from a perch, dip, and return to the perch again.

LEAST FLYCATCHER.

Empidonax minimus

This species is somewhat rare in our locality, and few individuals are found nesting here. It is more common in spring and autumn, when the birds may be seen perched on wire fences near road-sides. In many ways the Least Flycatcher is an under-study of the Phoebe. Like this species it moves its tail when at rest, and also choose similar places to perch. In movements, however, the Least Flycatcher is more active than the Phoebe. Another species that the Least Flycatcher closely resembles in appearance is the Alder Flycatcher, and even an experienced observer can hardly tell the two species apart, unless he hears the notes, which are quite distinctive. They are both about the same size, and their markings are indistinguishable even with field glasses.

ACADIAN FLYCATCHER.

Empidonax virescens

This is a bird of deep woods, where its note may be heard, but without usually seeing the singer. It loves the most secluded places in the very depths of the woods where the growth of small trees is thickest. Only a practised observer can readily see the bird, and then only as it flits to and fro flycatching. This is undoubtedly one of the most elusive of our birds, and few amateur bird students seem to find its habitat.

YELLOW-BELLIED FLYCATCHER.

Empidonax flaviventris

The rarest of our flycatchers is the yellow-billed. Usually late in May a few individuals are seen by the keenest observers, and even they occasionally miss it altogether. In autumn it passes more rapidly south, and few records are made of this species by any bird students. I have never made a single record myself in autumn.

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Chart Giving Partial Range of Variation of Nacre Color in the Species Discussed

LOCATION

UPPER OHIO DRAINAGE	FUSCONAJA FLAVA	AMBLEMA COSTATA	PLEUROBEMA COCCIN.	ELLIPTIO DILATAT.	SYMPHYNOTA COSTATA
1. Potato Creek, Southport				Light Purple Drab	Light Ochraceous Salmon
2. Allegheny River, Larabee			Flesh Pink	Light Vinaceous Purple	
3. Allegheny River, Warren			Buff Pink	Vinaceous Lilac	
4. Conewongo Creek, Russell			Pearl Blue	Brownish Vinaceous	
5. Allegheny River, Hickory			Pale Shell Pink	Vinaceous Lilac	Pale Pinkish Buff
6. Brokerstrow Creek, Garland			Dark Vinaceous		Pale Pinkish Cinnamon
7. Allegheny River, Tionesta			Pearl Blue	Deep Vi- naceous Gray	Pale Grayish Vinaceous
8. Allegheny River, Walnut Bend		Pearl Blue	Light Grayish Blue Vinaceous	Light Vi- naceous Purple	Pinkish Buff
9. Sandy Creek			Pearl Blue	Vinaceous Lilac	
10. Allegheny River, Parker's Landing				Light Purplish Vinaceous	
11. Allegheny River, Templeton			Shell Pink		
12. Allegheny River, Mosgrove		Pale Verbena Blue		Pale Bluish Lavendar	
13. Allegheny River, Rosston	Light Orange Pink	Pale Verbena Lilac	Light Grayish Blue Violet		
14. Allegheny River, Kelly	Light Salmon		Pale Grayish Blue Violet	Deep Vinaceous Lavender	Pale Salmon
15. Allegheny River, Godfrey	Pale Salmon	Pale Vinaceous Gray	Pearl Blue	Light Vinaceous Lilac	Pale Pinkish Buff
16. Allegheny River, White Rock				Pearl Blue to Light Buff	
17. Allegheny River, Aladdin		Pearl Blue	Pearl Blue		
18. Buffalo Creek, Harbison			Pearl Blue		Salmon Buff
19. Allegheny River, Schenley				Pearl Blue	
20. Allegheny River, Natrona				Purplish Lilac	
21. Harmarville, Pond					
FRENCH CREEK DRAINAGE					
22. Le Boeuf Creek		Pale Verbena Violet	Venetian Pink	Light Vina- ceous Lilac	Pale Ochraceous Buff
23. Cambridge Springs			Chatenay Pink		

PLATE III.

Discussed and Showing Association of Certain Shades of Nacre Color with Certain Localities

SPECIES

PHYNOTA COSTATA	ANODONTA GRANDIS	ANODONTOIDES FERUSS.	PARAPTERA FRAGILIS	PROPTERA ALATA	EURYNIA RECTA	LAMPSILIS LUTEOLA	LAMPSILIS OVATA
t Ochraceous Salmon		.					
					Pinkish Lilac	Light Rhodonite Pink	White to Light Pinkish Lilac
						White to Pale Pinkish Lilac	White to Light Pinkish Lilac
					Light Pinkish Lilac	Light Pinkish Lilac	
Pinkish Buff					Pinkish Lilac		Pale Grayish Blue Violet
Pinkish nnamon	Pale Grayish Blue Violet						
Grayish ceous					White		Pale Rhodonite Pink
nkish Buff					Pearl Blue		White to Lavender
	Pearl Blue						
				Light Purplish	Light Pinkish Lilac	Pale Aniline Lilac	Pale Persian Lilac
					Pale Persian Lilac		Pearl Blue
					Livid Pink	Light Pinkish Lilac	Pale Grayish Blue Vinaceous
Salmon			Pearl Blue	Pale Persian Lilac	White	Pinkish Lilac to Pearl Blue	Pale Grayish Blue Violet
Pinkish Buff			Flesh Pink	Light Purplish Vinaceous			
			Congo Pink		White		Pale Lilac
on Buff							White Light Pinkish Lilac
					Pale Vinaceous		
	Pale Grayish Blue Violet						
Ochraceous Buff	Pearl Blue					Pale Rhodonite Pink	
	Light Grayish Blue Violet					White to Pink- ish Lilac	White Pearl Blue

16. Allegheny River, White Rock				Pearl Blue to Light Buff	
17. Allegheny River, Aladdin		Pearl Blue	Pearl Blue		
18. Buffalo Creek, Harbison			Pearl Blue		Salmon Buff
19. Allegheny River, Schenley				Pearl Blue	
20. Allegheny River, Natrona				Purplish Lilac	
21. Harmarville, Pond					
FRENCH CREEK DRAINAGE					
22. Le Boeuf Creek		Pale Verbena Violet	Venetian Pink	Light Vinaceous Lilac	Pale Ochraceous Buff
23. Cambridge Springs			Chatenay Pink		
24. Conneauttee Lake					
25. Conneauttee Creek					Pale Pinkish Buff
26. Meadville		Lavender			
27. Conneaut Lake				Brownish	
28. Conneaut Lake N. E. Shore				Brownish Vinaceous	
29. Conneaut Lake E. Shore				Deep Vinaceous Lavender	
30. Conneaut Lake W. Shore				Purplish Vinaceous	
31. Conneaut Lake Outlet		Pearl Blue	Light Lavender Blue	Purplish Vinaceous	
32. Cochranon (Fr. Creek)		Pearl Blue		Light Vinaceous Lilac	Sea Shell Pink
33. Utica (Fr. Creek)		Light Pearl Blue	Venetian Pink	Slate Violet	Pinkish Buff
34. Sugar Creek, Coopertown					
RED BEND CREEK DRAINAGE					
35. Little Mahoning Creek Goodville			Pale Chatenay Pink	Deep Vinaceous Gray	
CROOKED CREEK DRAINAGE					
36. Creekside	Light Grayish Blue Violet				
37. Southbend				Dark Vinaceous Drab	
Rosston	Light Orange Pink	Pallid Grayish Blue Violet	Pale Salmon	Light Purplish Vinaceous	Shell Pink
KIMINETAS RIVER DRAINAGE					
39. Yellow Creek, Homer				White to Pearl Blue	
40. Quemahoning Stantons Mills				Light Vinaceous Lilac	Ochraceous Buff
41. Conemaugh River (New Florence)			Pearl Blue		

			Congo Pink		White		Pale Lilac
Salmon Buff							White Light Pinkish Lilac
					Pale Vinaceous		
	Pale Grayish Blue Violet						
Pale Ochraceous Buff	Pearl Blue					Pale Rhodonite Pink	
	Light Grayish Blue Violet					White to Pink- ish Lilac	White Pearl Blue
	Pale Grayish Blue Violet					Pale Grayish Blue Violet	
Pale Pinkish Buff						Pearl Blue	White to Pale Persian Lilac
		Pale Aniline Lilac				Light Pinkish Lilac	
	Light Pinkish Lilac	Light Grayish Blue Violet					
	Light Pinkish Lilac						
		Pale Grayish Blue Violet				Pale Rhodonite Pink	
Sea Shell Pink		Pale Grayish Blue Violet			Pale Persian Lilac	Pale Grayish Blue Violet	
Pinkish Buff					White		
	Vinaceous Pink						
						Pale Grayish Blue Violet	Pearl Blue to Lavender
	Pearl Blue					White to Light Pinkish Lilac	
Shell Pink	Pale Grayish Blue Violet				Pale Grayish Vinaceous	White to Light Pinkish Lilac	Light Pinkish Lilac
Ochraceous Buff							

~~Allegheny River White Rock~~
KIMINETAS RIVER DRAINAGE

39. Yellow Creek, Homer				White to Pearl Blue	
40. Quemahoning Stantons Mills				Light Vinaceous Lilac	Ochraceous Buff
41. Conemaugh River (New Florence)			Pearl Blue		
42. Loyalhanna R. (Ligonier)				Light Purplish Vinaceous	
43. Loyalhanna R. (Idle Park)			Pearl Blue	Pearl Blue	
MONONGAHELA R. DRAINAGE					
44. Cheat River, Cheat Haven				Light Vinaceous Purple	
45. Dunkard R. Mt. Morris	Light Orange Pink	Pale Orange Vinaceous	Cameo Pink	Light Purplish Vinaceous	Salmon Buff
46. Dunkard Cr. Wiley	Light Salmon			Heliotrope Gray	
47. South Fork 10 mi. Cr. Waynesburg	Pale Verbena Violet				Pale Pinkish Buff
48. Ten Mile Creek. Amity	Pale Grayish Vinaceous				
49. Ten Mile Creek Clarksville	Pale Pinkish Cinnamon				
50. Monongahela River Millsboro	Pale Verbena Violet			Light Purple Drab	
51. Monongahela River Charleroi	Pale Pinkish Cinnamon			Vinaceous Gray	Sea Shell Pink
52. Monongahela River Westmoreland Co.	Pale Pinkish Buff			Light Vinaceous Lilac	Pale Pinkish Buff
53. Monongahela River Elizabeth	Pale Grayish Lavender				Pale Ochraceous Buff
OHIO RIVER DRAINAGE					
54. Chartiers Cr. Carnegie	Pale Pinkish Cinnamon				
55. Ohio River, Neville Island	Pale Pinkish Buff			Pearl Blue Pale Vinaceous Lilac	Shell Pink
56. Ohio River, Coraopolis				Purple Drab	
57. Ohio River, Dead Man's Island				Purple Drab	
58. Ohio River, Edgeworth					
59. Ohio River Beaver					
BEAVER RIVER DRAINAGE					
60. Padan Creek, Linesville		Pearly Blue			
61. Randolph Run, Harlstown					
62. Shenango River, Jamestown			Shell Pink	Purple Drab	
63. Shenango River, Greenville				Vinaceous Lavender	
64. Shenango River, Shenango		Pearl Blue	Light Ochraceous Buff	Light Vinaceous Purple	

				Vinaceous			
Ochraceous Buff							
							White. Pearl Blue
	Pearl Blue						White. Pearl Blue
							Pearl Blue Light Pinkish Lilac
Salmon Buff	Pearl Blue						
							Pale Grayish Vinaceous
Pale Pinkish Buff							Pale Persian Lilac
	Pale Grayish Blue Violet					Pale Grayish Blue Violet	
							Light Pinkish Lilac
Sea Shell Pink							
Pale Pinkish Buff				Light Russet Vinaceous			
Pale Ochraceous Buff						White to Light Pinkish lilac	White Light Pinkish lilac
							Pale Aniline Lilac
Shell Pink				Pale Vinaceous	White	White to Pale Vinaceous Lilac	White to Light Pinkish Lilac
							White to Pale Grayish Blue Violet
			Hydrangea Pink				
			Pale Lobelia Violet	Light Russet Vinaceous			White, Pale Grayish Blue Violet
			Pale Vinaceous Pink				
	Pale Pinkish Buff	Pale Grayish Violet					
						Pearl Blue Light Pinkish Lilac	
	Pale Grayish Blue Violet					White, Pinkish Lilac	Pearl Blue Pale Grayish Vinaceous
		Light Grayish Blue Violet				Light Pinkish Lilac	White Pale Pinkish Lilac
		Pale Windsor Blue				Pale Grayish Blue Violet	Pale Persian Lilac

MONONGAHELA R. DRAINAGE					
44. Cheat River, Cheat Haven				Light Vina- ceous Purple	
45. Dunkard R. Mt. Morris	Light Orange Pink	Pale Orange Vinaceous	Cameo Pink	Light Purplish Vinaceous	Salmon Buff
46. Dunkard Cr. Wiley	Light Salmon			Heliotrope Gray	
47. South Fork 10 mi. Cr. Waynesburg	Pale Verbena Violet				Pale Pinkish Buff
48. Ten Mile Creek. Amity	Pale Grayish Vinaceous				
49. Ten Mile Creek Clarksville	Pale Pinkish Cinnamon				
50. Monongahela River Millsboro	Pale Verbena Violet			Light Purple Drab	
51. Monongahela River Charleroi	Pale Pinkish Cinnamon			Vinaceous Gray	Sea Shell
52. Monongahela River Westmoreland Co.	Pale Pinkish Buff			Light Vinaceous Lilac	Pale Pinkish
53. Monongahela River Elizabeth	Pale Grayish Lavender				Pale Ochraceo Buff
OHIO RIVER DRAINAGE					
54. Chartiers Cr. Carnegie	Pale Pinkish Cinnamon				
55. Ohio River, Neville Island	Pale Pinkish Buff			Pearl Blue Pale Vinaceous Lilac	Shell Pink
56. Ohio River, Coraopolis				Purple Drab	
57. Ohio River, Dead Man's Island				Purple Drab	
58. Ohio River, Edgeworth					
59. Ohio River Beaver					
BEAVER RIVER DRAINAGE					
60. Padan Creek, Linesville		Pearly Blue			
61. Randolph Run, Harlstown					
62. Shenango River, Jamestown			Shell Pink	Purple Drab	
63. Shenango River, Greenville				Vinaceous Lavender	
64. Shenango River, Shenango		Pearl Blue	Light Ochraceous Buff	Light Vinaceous Purple	
65. Shenango River Clarksville		Pearl Blue	Chatenay Pink	Dark Vinaceous Gray	Pale Ochraceo Salmon
66. Pymatuning Cr. Pyma- tuning Twshp		Pale Aniline Lilac	Pearl Blue	Deep Vinaceous Gray	Pale Ochraceo Buff
67. Shenango River Sharpsville		Pearl Blue	Pale Aniline Lilac	Light Vinaceous Lilac	Light Buff

							Blue
							Pearl Blue Light Pinkish Lilac
Salmon Buff	Pearl Blue						
							Pale Grayish Vinaceous
Pale Pinkish Buff							Pale Persian Lilac
	Pale Grayish Blue Violet					Pale Grayish Blue Violet	
							Light Pinkish Lilac
Sea Shell Pink							
Pale Pinkish Buff				Light Russet Vinaceous			
Pale Ochraceous Buff						White to Light Pinkish lilac	White Light Pinkish lilac
							Pale Aniline Lilac
Shell Pink				Pale Vinaceous	White	White to Pale Vinaceous Lilac	White to Light Pinkish Lilac
							White to Pale Grayish Blue Violet
			Hydrangea Pink				
			Pale Lobelia Violet	Light Russet Vinaceous			White, Pale Gray- ish Blue Violet
			Pale Vinaceous Pink				
	Pale Pinkish Buff	Pale Grayish Violet					
						Pearl Blue Light Pinkish Lilac	
	Pale Grayish Blue Violet					White, Pinkish Lilac	Pearl Blue Pale Grayish Vinaceous
		Light Grayish Blue Violet				Light Pinkish Lilac	White Pale Pink- ish Lilac
		Pale Windsor Blue				Pale Grayish Blue Violet	Pale Persian Lilac
Pale Ochraceous Salmon						Light Pinkish Lilac	White Pearl Blue
Pale Ochraceous Buff	Lavender Gray	Pearl Blue				Pearl Blue	Light Pinkish Lilac
Light Buff	Light Grayish Blue Violet	Pearl Blue				White to Pale Persian Lilac	

Chart Giving Partial Range of Variation of Nacre Color in the Species Discussed and Sh

LOCATION

BEAVER RIVER DRAINAGE	FUSCONAJA FLAVA	AMBLEMA COSTATA	PLEUROBEMA COCCINEUM	ELLIPTIO DILATATUS	SYMPHYNOTA COSTATA	ANODONTA GRANDIS
68. Shenango River Pulaski		Grayish Lavender	Pale Congo Pink	Light Vinaceous Purple		
69. Shenango River Harbor Bridge		Grayish Lavender	Light Grayish Blue violet	Pale Grayish Vinaceous	Pale Pinkish Buff	
70. Otter Creek					Pale Pinkish Buff	
71. Neshannock Cr. Leesburg			Pale Persian Lilac	Deep Vinaceous Lavender	Sea Shell Pink	
72. Neshannock Cr. Eastbrook			Pale flesh Color	Light Vinaceous Purple		
73. Neshannock Cr. Eastbranch			Pale vinaceous Pink	Purple Drab	Sea Shell Pink	
74. Mahoning River Leavittsburgh Ohio						
75. Mahoning River Edinboro		Pale Campanula Blue		Vinaceous Drab		
76. Mahoning River Hillville		Lilac Gray		Pale Grayish Vinaceous		Sea Shell Pink
77. Mahoning River Coverts		Pearly Blue	Pale Pinkish Cinnamon	Deep Vinaceous Gray		
78. Mahoning River Mahoningstown, Pa.		Pearl Blue	Grayish Lavender	Dark Purple Drab	Pale Pinkish Buff	
79. Beaver River Wampum		Very Pale Vinaceous	Pale Ochraceous Buff	Light Vinaceous Lilac		Pearl Blue
80. Slippery Rock Cr. Rose Point				Deep Vinaceous Gray		Pearl Blue
81. Slippery Rock Cr. Wurttemberg		Pearl Blue	Pale Cinnamon Pink	Brownish Vinaceous	Pale Pinkish Buff	
82. Connoquenessing Cr. Connoquenessing						
83. Connoquenessing Cr. Harmons			Salmon Color			
84. Connoquenessing Cr. Zelienople						
85. Brush Cr. Celia						Pearl Blue
86. Connoquenessing Cr. Ellwood City			Pearl Blue			
LITTLE BEAVER CR. DRAINAGE						
87. Little Beaver Cr. Enon Valley				Vinaceous Lilac		
88. Little Beaver Creek St. W. Branches				Vinaceous Lilac		
89. Little Beaver Creek Cannelton					Pale Pinkish Buff	
90. Little Beaver Creek				Deep Vinaceous		

PLATE III.

Used and Showing Association of Certain Shades of Nacre Color with Certain Localities

SPECIES

[illegible]

83. Connoquenessing Cr. Harmons			Salmon Color			
84. Connoguinessing Cr. Zelenople						
85. Brush Cr. Celia						Pearl Blue
86. Connoquenessing Cr. Ellwood City			Pearl Blue			
LITTLE BEAVER CR. DRAINAGE						
87. Little Beaver Cr. Enon Valley				Vinaceous Lilac		
88. Little Beaver Creek St. W. Branches				Vinaceous Lilac		
89. Little Beaver Creek Cannelton					Pale Pinkish Buff	
90. Little Beaver Creek Darlington				Deep Vinaceous Lavender		
91. Little Beaver Creek New Galilee				Light Purplish Vinaceous		
OHIO RIVER						
92. Raccoon Cr. New Sheffield	Deeper Hermosa Pink				Sea Shell Pink	Pale Grayish Blue Violet
93. Ohio River, Shippingsport		Pale Grayish Vinaceous		Vinaceous Gray		
94. Ohio River, Industry		Pale Vinaceous Gray		Pearl Blue Pale Pinkish Lilac		
95. Ohio River, Cook Ferry		Pale Grayish Vinaceous		Pearl Blue to Light Pinkish Buff		
96. Ohio River Smith's Ferry				Purplish Lilac		Pale Grayish Blue Violet
LAKE ERIE						
97. La Plaisance Bay Mich	Light Gray. Bl. Vio. Light Flesh Pink	Light Pinkish Violet	Burn Blue	Deep Vinaceous Gray	Light Buff, Pale Cinnamon Pink	
98. Cedar Point, Ohio	Light Salmon Orange	Pearl Blue		Vinaceous Lavender		Pearl Blue
99. Vermillion, Ohio				Pearl Blue		
100. PRESQUE ISLE Lake Erie off Presque Isle				Deep Vinaceous Lavender		
Presque Isle Bay Beach Pools						Light Grayish Blue Violet Pearl Blue
Pond North Shore						Pearl Blue
Beach Pool, E. E. East End				Pale Rhodonite Pink		Deep Lavender Pearl Blue
East End, Outer Beach South Shore	La France Blue	Pale Aniline Violet		Pearl Blue Vinaceous Lilac		
Flats near West End Big Bend	Light Grayish Violet	Pale Verbena Violet		Light Vinaceous Purple	Pale Ochraceous Salmon	Pale Aniline Lilac
Big Bend West of Water Works Big Bend off Waterworks	Light Flesh Pink	Deep Grayish Lav. Pearl Blue	Pale Vinaceous Pink	Dark Vinaceous Gray	Pale Ochraceous Buff	
Big Bend, West End Big Bend, East End			Burn Blue			Pale Pinkish Buff Pearl Blue
		Deep Blue Pale	Burn Blue	Deep Vinaceous	Pale Pinkish Buff	

Pearl Blue						
						White Light Pinkish Lilac
						Pearl Blue Pale Grayish Blue Violet
					Pearl Blue Pale Pinkish Lilac	Pearl Blue Light Pinkish Lilac
Pale Grayish Blue Violet						Pearl Blue Light Pinkish Lilac
		Light Russet Vinaceous	White to Pale Lilac			
		Pale Vina- ceous Lilac	Light Purplish Vinaceous	White	Pearl Blue to Light Pinkish Lilac	Light Pinkish Lilac Pearl Blue
		Pale Laelia Pink	Pale Congo Pink Pink			Light Pinkish Lilac Blue Pearl
Pale Grayish Blue Violet		Pale Purplish Vinaceous				
		Pale Pinkish Lilac	Hydrangea Pink	Pale Lilac	Light Pinkish Lilac	Pale Purplish Vinaceous
Pearl Blue			Light Pinkish Lilac	Pearl Blue	Pale Rhodonite Pink	Light Pinkish Lilac
			Laelia Pink	Pearl Blue	Light Pinkish Violet	White to Pearl Blue
	Pearl Blue				Pale Grayish Blue Violet	White, Light Pinkish Lilac
Light Grayish Blue Violet Pearl Blue	Pale Bluish Lavender				Pale Rhodonite Pink	Pale Grayish Violet
Pearl Blue				Light Pinkish Lilac	Pearl Blue	
Deep Lavender Pearl Blue						Pale Persian Lilac
					Light Pinkish Lilac	
Pale Aniline Lilac	Lavender	Pale Rhodonite Pink	Hydrangea Pink	Pearl Blue	Lavender, Pearl Blue, Pale Lilac	Light Pinkish Lilac
	Pale Aniline Lilac	Pale Pinkish Lilac	Light Purplish Vinaceous		Pale Pinkish Lilac Pale Rhodonite Pink	White Pearl Blue
Pale Pinkish Buff Pearl Blue	Pale Bluish Lavender		Pale Vinaceous Pink			
		Pale Congo Pink	Pale Persian		White, Pale Pinkish Blue, Pearl Blue	White

Flats near West End Big Bend	Light Grayish Violet	Pale Verbena Violet		Light Vinaceous Purple	Pale Ochraceous Salmon	Pale Aniline Lilac
Big Bend West of Water Works Big Bend off Waterworks	Light Flesh Pink	Deep Grayish Lav. Pearl Blue	Pale Vinaceous Pink	Dark Vinaceous Gray	Pale Ochraceous Buff	
Big Bend, West End Big Bend, East End			Burn Blue			Pale Pinkish Buff Pearl Blue
Misery Bay Crystal Point		Pearl Blue Pale Verbena Violet	Burn Blue	Deep Vinaceous Lav., Pearl Blue	Pale Pinkish Buff	
North Shore Crystal Point Horse-shoe Bend	Light Salmon	Pearl Blue Pearl Blue				
Beach Pools, L. Erie						
101. Buffalo						
102. Port Colborne						
103. Port Dover						
104. Port Rowan						
MAUMEE RIVER DRAINAGE						
105. St. Mary's River Rockford, Ohio						
106. Blanchard River Finley, Ohio						
107. Silver Creek Williams Co., Ohio						
108. Maumee River Rapids						Pale Grayish Blue Violet
109. Maumee River Station Pond						
110. Maumee River Allan Co., Ohio						
111. Beaver Creek Williams Co., Ohio						
112. Swan Creek Toledo, Ohio						
113. Miami and Erie Canal Waterville, Ohio	Grayish Lavender					
114. Ten Mile Creek Silica, Ohio						
115. St. Joseph's River Indiana						
OTHER STREAMS DRAINING TO L. ERIE						
116. Raisin River, Adrian Co., Michigan						
117. Otter Creek Monroe Co., Mich.						
118. Conneaut Creek West Springfield, Pa.				Vinaceous Lilac	Pearl Blue	Light Grayish Blue Violet
119. Elk Creek, Miles Grove, Pa.						Pale Pinkish Cinnamon
120. Tuscarawas River Ohio	Pale Grayish Blue Violet			Deep Vinacious Gray		Pearl Blue

						Blue
Pale Aniline Lilac	Lavender	Pale Rhodonite Pink	Hydrangea Pink	Pearl Blue	Lavender, Pearl Blue, Pale Lilac	Light Pinkish Lilac
	Pale Aniline Lilac	Pale Pinkish Lilac	Light Purplish Vinaceous		Pale Pinkish Lilac Pale Rhodonite Pink	White Pearl Blue
Pale Pinkish Buff Pearl Blue	Pale Bluish Lavender		Pale Vinaceous Pink			
		Pale Congo Pink	Pale Persian Lilac		White, Pale Pinkish Lilac, Pearl Blue	White
	Pale Bluish Lavender					
	Pearl Blue					
					White to Light Pinkish Lilac	White Pearl Blue
	Pale Aniline Lilac				Lilac	White, Light Pinkish Lilac
						White Pearl Blue
					Pale Grayish Blue Violet	
					Pearl Blue	
	Pearl Blue					
Pale Grayish Blue Violet			Light Purplish Lilac	Light Pinkish Lilac	Pale Persian Lilac	Pale Grayish Blue, Violet
						Pearl Blue
					White	
					White Pale Rhodonite Pink	
	Pale Grayish Blue Violet				Pearl Blue Light Pinkish Lilac	
	Pale Aniline Lilac				Pearl Blue Pale Rhodonite Pink	White
	Pale Aniline Lilac					
					Light Pinkish Lilac	
Light Grayish Blue Violet						Pale Pinkish Lilac
Pale Pinkish Cinnamon	Pearl Blue					
Pearl Blue					Laelia Pink	

Horse-shoe Bend		Pearl Blue				
Beach Pools, L. Erie						
101. Buffalo						
102. Port Colborne						
103. Port Dover						
104. Port Rowan						
MAUMEE RIVER DRAINAGE						
105. St. Mary's River Rockford, Ohio						
106. Blanchard River Finley, Ohio						
107. Silver Creek Williams Co., Ohio						
108. Maumee River Rapids						Pale Grayish Blue Violet
109. Maumee River Station Pond						
110. Maumee River Allan Co., Ohio						
111. Beaver Creek Williams Co., Ohio						
112. Swan Creek Toledo, Ohio						
113. Miami and Erie Canal Waterville, Ohio	Grayish Lavender					
114. Ten Mile Creek Silica, Ohio						
115. St. Joseph's River Indiana						
OTHER STREAMS DRAINING TO L. ERIE						
116. Raisin River, Adrian Co., Michigan						
117. Otter Creek Monroe Co., Mich.						
118. Conneaut Creek West Springfield, Pa.				Vinaceous Lilac	Pearl Blue	Light Grayish Blue Violet
119. Elk Creek, Miles Grove, Pa.						Pale Pinkish Cinnamon
120. Tuscarawas River Ohio	Pale Grayish Blue Violet			Deep Vinacious Gray		Pearl Blue
121. Chautaugua (N. Y.) Lake						
Bemus Point Celeron						
Griffiths Landing						

	Pale Bluish Lavender						
	Pearl Blue						
						White to Light Pinkish Lilac	White Pearl Blue
	Pale Aniline Lilac					Lilac	White, Light Pinkish Lilac
							White Pearl Blue
						Pale Grayish Blue Violet	
						Pearl Blue	
	Pearl Blue						
Pale Grayish Blue Violet			Light Purplish Lilac	Light Pinkish Lilac		Pale Persian Lilac	Pale Grayish Blue, Violet
							Pearl Blue
						White	
						White Pale Rhodonite Pink	
	Pale Grayish Blue Violet					Pearl Blue Light Pinkish Lilac	
	Pale Aniline Lilac					Pearl Blue Pale Rhodonite Pink	
							White
	Pale Aniline Lilac						
						Light Pinkish Lilac	
Light Grayish Blue Violet							Pale Pinkish Lilac
Pale Pinkish Cinnamon	Pearl Blue						
Pearl Blue						Laelia Pink	
					Vinaceous Pink	Pale Pinkish Lilac Light Pinkish Lilac	Pearl Blue Pale Pinkish Lilac
						Pale Pinkish Lilac	Pale Verbena Violet

Chart Giving Partial Range of Variation of Epidermal Color in Species Disc

UPPER OHIO DRAINAGE	FUSCONAJA FLAVA	AMBLEMA COSTATA	PLEUR. OBLIQ COCCINEUM	ELLIPTIO DILATATUS	SYMPHYNOTA COSTATA
1 Potato Creek Smethport				Warm Sepia Brownish Olive	Saccardos Olive
2 Allegheny River Larabee			Bone Brown Buffy Citrine	Snuff Brown Saccardos Umber	
3 Allegheny River Warren			Seal Brown Ecrú Olive	Light Seal Brown	
4 Conewango Cr. Russell			Seal Brown	Tawney Olive Citrine	
5 Allegheny River Hickory			Mars Brown	Seal Brown Olive	Warm Sepia
6 Brokenstraw Cr. Garland			Burnt Umber Olive		Dresden Brown Olive
7 Allegheny River Tionesta			Buffy Citrine	Cinnamon Brown Buffy Citrine	Buffy Olive
8 Allegheny River Walnut Bend			Warm Sepia Olive	Snuff Brown	Prouts Brown Buffy Citrine
9 Sandy Creek			Mummy Brown	Dresden Brown Buffy Citrine	
10 Allegheny River Parkers Ldg.				Aniline Black, Van Dyke Brown	
11 Allegheny River Templeton			Blackish Brown		
12 Allegheny River Mosgrove				Sepia, Buffy Olive	
13 Allegheny River Rosston	Sepia, Yellowish Citrine	Dresden Brown Dull Citrine	Dresden Brown Brownish Olive		
14 Allegheny River Kelley	Dresden Brown Brownish Olive	Warm Sepia	Seal Brown Olive Lake	Carob Brown Olive Lake	Buffy Olive
15 Allegheny River Godfrey	Warm Sepia Buffy Olive	Light Seal Brown Yellowish Citrine	Prout Brown Buffy Citrine	Seal Brown Buffy Citrine	Ecrú Olive Buffy Olive
16 Allegheny River White Rock	Cinnamon Brown Tawney Olive			Snuff Brown Dark Citrine	
17 Allegheny River Aladdin		Snuff Brown	Cinnamon Brown Ecrú Olive		
18 Buffalo Cr. Harbison			Carob Brown Brownish Olive		Buffy Citrine
19 Allegheny River Schenley				Cinnamon Brown Deep Olive	
20 Allegheny River Natrona				Dresden Brown Wax Yellow	
21 Harmarville Pond					
FRENCH CREEK DRAINAGE					

PLATE III.

Species Discussed, and Showing Association of Certain Epidermal Colors with Particular Localities

SYMPHYNOTA COSTATA	ANODONTA GRANDIS	PARAPTERA FRAGILIS	PROPTERA ALATA	ANODONTOIDES FERUSSACIANUS	EURYNIA RECTA	LAMPSILIS LUTEOLA	LAMPSILIS OVATA
Saccardos Olive							
						Dresden Brown Ecu Olive	Buffy Olive Old Gold
					Warm Sepia Verona Brown		Dresden Brown Old Gold
					Bone Brown	Olive Ocher Ecu Olive	
Warm Sepia					Brownish Olive Dk Greenish Olive		Brownish Olive Buffy Citrine
Dresden Brown Olive	Yellowish Citrine Lt Hellebore Grn						
Buffy Olive							Sepia, Isabella Color
Prouts Brown Buffy Citrine					Snuff Brown Warm Sepia		Sepia Olive Lake
	Lt Yellowish Olive Brownish Olive						
			Mummy Brown Saccardos Olive		Warm Sepia Olive	Lt Brownish Olive Yellowish Citrine	Sepia Isabella Color
					Dk Greenish Olive Dark Citrine		Buffy Olive Honey Yellow
							Old Gold Brownish Olive
Buffy Olive		Deep Olive Buff Citrine Drab.	Bister, Saccardos Umber		Sepia, Olive	Olive Lake Saccardo Olive	Brownish Olive Yellowish Olive
Ecu Olive Buffy Olive		Olive Brown Olive Lake	Blackish Brown		Lt Brownish Olive Dark Olive		
		Olive Brown Olive Lake			Lt Seal Brown Brownish Olive		Dresden Brown Olive Lake
Buffy Citrine							Ecu Olive Buffy Olive
			Snuff Brown Saccardos Umber				
	Old Gold, Olive Green						

14	Allegheny River Kelley	Dresden Brown Brownish Olive	Warm Sepia	Seal Brown Olive Lake	Carob Brown Olive Lake	Buffy Olive
15	Allegheny River Godfrey	Warm Sepia Buffy Olive	Light Seal Brown Yellowish Citrine	Prout Brown Buffy Citrine	Seal Brown Buffy Citrine	Ecu Olive Buffy Olive
16	Allegheny River White Rock	Cinnamon Brown Tawney Olive			Snuff Brown Dark Citrine	
17	Allegheny River Aladdin		Snuff Brown	Cinnamon Brown Ecu Olive		
18	Buffalo Cr. Harbison			Carob Brown Brownish Olive		Buffy Citrine
19	Allegheny River Schenley				Cinnamon Brown Deep Olive	
20	Allegheny River Natrona				Dresden Brown Wax Yellow	
21	Harmarville Pond					
FRENCH CREEK DRAINAGE						
22	Le Boeui Cr.		Yellowish Citrine Warm Sepia	Dresden Brown Bay Color	Warm Sepia Brownish Olive	Mars Brown
23	Cambridge Springs			Mars Brown Brownish Olive		
24	Conneauttee Lake					
25	Conneauttee Creek					Warm Sepia Buffy Citrine
26	Meadville		Saccardos Olive Mummy Brown			
27	Conneaut Lake				Dresden Brown Olive Brown	
28	Conneaut Outlet		Prouts Brown	Prouts Brown Buffy Citrine		
29	French Creek Cochranon		Buffy Citrine Prouts Brown		Sepia Dark Olive	Saccardos Umber Ecu Olive
30	French Creek Utica		Blackish Brown	Seal Brown Burnt Umber	Seal Brown Brownish Olive	Saccardos Olive Sepia
31	Sugar Creek Coopertown					
32	Little Mahoning Cr. Goodville, Indiana Co.			Mummy Brown Brownish Olive	Seal Brown Brownish Olive	
33	Crooked Creek Creekside	Ecu Olive Clove Brown				
34	Crooked Creek South Bend				Warm Sepia Brownish Olive	
35	Crooked Creek Rosston	Seal Brown Yellowish Citrine	Prouts Brown Dull Citrine	Prouts Brown Buffy Olive	Mummy Brown Buffy Citrine	Lt Brownish Olive Olive
KISKIMINETAS RIVER DRAINAGE						
36	Quemahoning Cr. Stantons Mills				Verona Brown Buffy Citrine	Warm Sepia, Buffy Citrine
37	Conemaugh R. New Florence			Mars Brown Olive Lake		
38	Loyalhanna R. Ligonier				Snuff Brown Dark Olive	
39	Loyalhanna R.			Warm Sepia	Dresden Brown	

Buffy Olive		Deep Olive Buff Citrine Drab.	Bister, Saccardos Umber		Sepia, Olive	Olive Lake Saccardo Olive	Brownish Olive Yellowish Olive
Ecru Olive Buffy Olive		Olive Brown Olive Lake	Blackish Brown		Lt Brownish Olive Dark Olive		
		Olive Brown Olive Lake			Lt Seal Brown Brownish Olive		Dresden Brown Olive Lake
Buffy Citrine							Ecru Olive Buffy Olive
			Snuff Brown Saccardos Umber				
	Old Gold, Olive Green						
Mars Brown	Brownish Olive Cress Green					Lt Brownish Olive Olive Lake	
	Deep Olive Buff Yellowish Citrine						Lt Brownish Olive Olive Lake
	Lt Brownish Olive Ecru Olive					Old Gold Saccardos Olive	
Warm Sepia Buffy Citrine							
	Lt Brownish Olive Brownish Olive			Brownish Olive Light Brown. Olive	Verona Brown Dark Olive	Olive Lake Buffy Citrine	
	Ecru Olive Yellowish Olive			Mummy Brown Buffy Citrine		Brownish Olive Buffy Citrine	
				Brownish Olive Buffy Citrine		Lt Brownish Olive Ecru Olive	
Saccardos Umber Ecru Olive					Sepia, Deep Olive		
Saccardos Olive Sepia					Bister Buffy Citrine		
	Bister						
						Lt Brownish Olive Ecru Olive	Brownish Olive Ecru Olive
	Brownish Olive Yellowish Olive					Ecru Olive Brownish Olive	
Brownish Olive Olive					Dk Greenish Olive Dusky Yel'sh Green	Ecru Olive Buffy Olive	Buffy Olive Honey Yellow
Warm Sepia, Buffy Citrine							
							Buffy Olive Olive Lake
	Bister, Buffy						Buffy Olive Isabella Color

KISKIMINETAS RIVER DRAINAGE						
36	Quemahoning Cr. Stantons Mills				Verona Brown Buffy Citrine	Warm Sepia, Buff Citrine
37	Conemaugh R. New Florence			Mars Brown Olive Lake		
38	Loyalhanna R. Ligonier				Snuff Brown Dark Olive	
39	Loyalhanna R. Idle Park			Warm Sepia Yellowish Olive	Dresden Brown Buffy Olive	
MONONGAHELA RIVER DRAINAGE						
40	Cheat River Cheat Haven		Seal Brown		Warm Sepia Ecru Olive	
41	Dunkard Cr. Mt. Morris	Brussels Brown Olive Brown	Light Seal Brown	Seal Brown Warm Sepia	Buffy Citrine Brownish Olive	Warm Sepia Brownish Olive
42	Dunkard Cr. Wiley				Snuff Brown Light Brown Olive	
43	Ten M'le Creek Waynesburg	Seal Brown Ecru Olive				Mummy Brown
44	Ten Mile Creek Amity	Cinnamon Brown Dark Olive Buff				
45	Ten Mile Creek Clarksville					
46	Monongahela R. Millsboro	Light Seal Brown Buffy Olive			Bister Brownish Olive	
47	Monongahela R. Charleroi	Light Seal Brown Bister			Seal Brown	Sepia Brownish Olive
48	Monongahela R. Westmoreland Co.	Sepia, Yellowish Citrine				
49	Monongahela R. Elizabeth	Bister Deep Olive Brown				Mummy Brown
OHIO RIVER DRAINAGE						
50	Chartiers Cr. Carnegie	Light Seal Brown Citrine Drab				
51	Ohio River Neville Island	Bister Brownish Olive			Bister Cinnamon Brown	Bister Deep Olive
52	Ohio River Coraopolis				Black Dark Olive	
53	Ohio River Dead Mans Island					
54	Ohio River Edgeworth					
55	Ohio River Beaver					
BEAVER RIVER DRAINAGE						
56	Padan Creek Linesville		Prouts Brown Yellowish Citrine	Walnut Brown		
57	Randolph Run Hartstown					
58	Shenango River Jamestown			Prouts Brown Cinnamon	Dresden Brown Deep Olive	
59	Shenango River Greenville				Mummy Brown Brownish Olive	

Warm Sepia, Buffy Citrine							
							Buffy Olive Olive Lake
	Bister, Buffy Brown						Buffy Olive Isabella Color
							Brownish Olive Olive Lake
Warm Sepia Brownish Olive	Mummy Brown Ecu Olive						
							Buffy Brown Ecu Olive
Mummy Brown						Brownish Olive Ecu Olive	Brownish Olive Olive Lake
	Ecu Olive Yellowish Olive						
							Lt Brownish Olive Deep Colonial Buff
epia Brownish Olive							
			Blackish Brown Buffy Olive				
Mummy Brown						Brownish Olive Ecu Olive	
							Brownish Olive Olive Lake
Bister Deep Olive			Buffy Brown Buffy Olive		Bister Brownish Olive	Ecu Olive Brownish Olive	Sepia Isabella Color
							Dresden Brown Olive Lake
		Brownish Olive Olive Lake					
		Buffy Olive Ecu Olive	Sepia Saccardos Umber		Snuff Brown Yellow. Citrine		Buffy Olive Ecu Olive
		Colonial Buff Yellow Citrine					
	Buffy Olive Yellowish Olive			Light Brown. Olive Yellow. Citrine		Deep Colonial Buff Olive Lake	
						Deep Colonial Buff Light Brown. Olive	
	Brownish Olive Lt Yellowish Olive					Olive Ochre Old Gold	Isabella Color Mummy Brown
				Brownish Olive Dull Citrine		Light Brown. Olive Olive Ochre	Light Brown. Olive Olive Lake

Stantons Mills					Buffy Citrine	Citrine
37	Conemaugh R. New Florence			Mars Brown Olive Lake		
38	Loyalhanna R. Ligonier				Snuff Brown Dark Olive	
39	Loyalhanna R. Idle Park			Warm Sepia Yellowish Olive	Dresden Brown Buffy Olive	
MONONGAHELA RIVER DRAINAGE						
40	Cheat River Cheat Haven		Seal Brown		Warm Sepia Ecrú Olive	
41	Dunkard Cr. Mt. Morris	Brussels Brown Olive Brown	Light Seal Brown	Seal Brown Warm Sepia	Buffy Citrine Brownish Olive	Warm Sepia Brownish Olive
42	Dunkard Cr. Wiley				Snuff Brown Light Brown Olive	
43	Ten Mile Creek Waynesburg	Seal Brown Ecrú Olive				Mummy Brown
44	Ten Mile Creek Amity	Cinnamon Brown Dark Olive Buff				
45	Ten Mile Creek Clarks ville					
46	Monongahela R. Millsboro	Light Seal Brown Buffy Olive			Bister Brownish Olive	
47	Monongahela R. Charleroi	Light Seal Brown Bister			Seal Brown	Sepia Brownish Olive
48	Monongahela R. Westmoreland Co.	Sepia, Yellowish Citrine				
49	Monongahela R. Elizabeth	Bister Deep Olive Brown				Mummy Brown
OHIO RIVER DRAINAGE						
50	Chartiers Cr. Carnegie	Light Seal Brown Citrine Drab				
51	Ohio River Neville Island	Bister Brownish Olive			Bister Cinnamon Brown	Bister Deep Olive
52	Ohio River Coraopolis				Black Dark Olive	
53	Ohio River Dead Mans Island					
54	Ohio River Edgeworth					
55	Ohio River Beaver					
BEAVER RIVER DRAINAGE						
56	Padan Creek Linesville		Prouts Brown Yellowish Citrine	Walnut Brown		
57	Randolph Run Hartstown					
58	Shenango River Jamestown			Prouts Brown Cinnamon	Dresden Brown Deep Olive	
59	Shenango River Greenville				Mummy Brown Brownish Olive	

Citrine								
								Buffy Olive Olive Lake
	Bister, Buffy Brown							Buffy Olive Isabella Color
								Brownish Olive Olive Lake
Warm Sepia Brownish Olive	Mummy Brown Ecrú Olive							
								Buffy Brown Ecrú Olive
Mummy Brown							Brownish Olive Ecrú Olive	Brownish Olive Olive Lake
	Ecrú Olive Yellowish Olive							
								Lt Brownish Olive Deep Colonial Buff
Sepia Brownish Olive								
			Blackish Brown Buffy Olive					
Mummy Brown							Brownish Olive Ecrú Olive	
								Brownish Olive Olive Lake
Bister Deep Olive			Buffy Brown Buffy Olive			Bister Brownish Olive	Ecrú Olive Brownish Olive	Sepia Isabella Color
								Dresden Brown Olive Lake
		Brownish Olive Olive Lake						
		Buffy Olive Ecrú Olive	Sepia Saccardos Umber			Snuff Brown Yellow. Citrine		Buffy Olive Ecrú Olive
		Colonial Buff Yellow Citrine						
	Buffy Olive Yellowish Olive				Light Brown. Olive Yellow. Citrine		Deep Colonial Buff Olive Lake	
							Deep Colonial Buff Light Brown. Olive	
	Brownish Olive Lt Yellowish Olive						Olive Ochre Old Gold	Isabella Color Mummy Brown
					Brownish Olive Dull Citrine		Light Brown. Olive Olive Ochre	Light Brown. Olive Olive Lake

Chart Giving Partial Range of Variation of Epidermal Color in Species Discussed, and Showing

BEAVER RIVER DRAINAGE	FUSCONAJA FLAVA	AMBLEMA COSTATA	PLEUR. OBLIG. COCCINEUM	ELLIPTIO DILATATUS	SYMPHYNOTA COSTATA	ANODONTA GRANDIS	PAR
60 Shenango River Shenango		Dresden Yellowish Citrine	Carob Brown Deep Olive	Seal Brown Dresden Brown			
61 Shenango River Clarksville		Prouts Brown Buffy Citrine	Warm Sepia Buffy Citrine	Natal Brown Olive Brown	Buffy Olive Warm Sepia		
62 Pymatuning Cr. Pym. Twshp.		Mummy Brown Yellow Citrine	Brussels Brown Yellowish Citrine	Mars Brown Buffy Olive	Warm Sepia Dull Citrine	Ecu Olive Yellowish Citrine	
63 Shenango R. Sharpsville		Mars Brown Buffy Citrine		Clove Brown	Brownish Olive Olive		
64 Shenango R. Pulaski		Prouts Brown Yellowish Citrine	Cinnamon Brown Brownish Olive	Warm Sepia Olive Citrine			
65 Shenango R. Harbor Bridge			Bay, Buffy Olive	Verona Brown Buffy Citrine	Dresden Brown Dark Citrine		
66 Otter Creek					Olive Lake		
67 Neshannock Cr. Leesburg			Van Dyke Brown Tawney Olive	Warm Sepia Dark Olive Buff	Dark Citrine		
68 Neshannock Cr. Eastbrook			Mars Brown Buffy Citrine				
69 Neshannock Cr. Eastbranch							
70 Mahoning R. Leavittsburgh Ohio							
71 Mahoning R. Edinboro		Cinnamon Brown Yellowish Citrine		Bone Brown Dark Olive Buff			
72 Mahoning R. Hillsville		Mars		Carob Brown Bister		Buffy Citrine Lt Hellebore Green	
73 Mahoning R. Coverts		Prouts Brown Buffy Citrine	Mummy	Warm Sepia			
74 Mahoning R. Mahoningtown Pa.		Mummy Brown Dull Citrine	Mars Brown Buffy Citrine	Mars Brown Brownish Olive	Light Brown Olive Olive Citrine		
75 Beaver River Wampum		Mars Brown Olive Citrine	Prouts Brown Olive Lake	Warm Sepia Buffy Citrine		Olive Lake Varley Green	
76 Slippery Rock Cr. Roso Point				Dresden Brown Olive Citrine			
77 Slippery Rock Cr. Wurtemberg		Mars Brown Dk Olive Buff	Carob Brown Brownish Olive		Dark Olive Buff Citrine Drab		
78 Connoquenessing Cr. Connoquenessing		Blackish Brown II.					
79 Connoquenessing Cr. Harmony		Blackish Brown Dull Citrine	Blackish Brown				
80 Connoquenessing Cr. Zelienople		Lt Seal Brown					
81 Brush Cr. Cala						Warm Sepia Olive Lake	

E III.

and Showing Association of Certain Epidermal Colors with Particular Localities

ANTATA GRANDIS	PARAPTERA FRAGILIS	PROPTERA ALATA	ANODONTOIDES FERUSSACIANUS	EURYNIA RECTA	LAMPSILIS LUTEOLA	LAMPSILIS OVATA
						Mars Brown Olive Lake
					Olive Lake Buffy Citrine	Buffy Olive Olive Ochre
u Olive ish Citrine			Brown Olive Ivy Green		Buffy Olive Lime Green	
			Dk Green Olive Brown Olive		Olive Lake Buffy Citrine	
					Dp Colon. Buff Buffy Olive	
						Brownish Olive Buffy Olive
					Buffy Citrine Saccardos Olive	Warm Sepia Olive Lake
						Olive Lake Olive Citrine
						Olive Citrine Olive Lake
					Lime Green Deep Olive Buff	
y Citrine bore Green						
					Deep Colon. Buff Dark Olive Buff	Brownish Olive Honey Yellow
lake ey Green					Deep Colon. Buff Light Brown Olive	Deep Olive Buff Ecrú Olive
					Ecrú Olive Buffy Olive	Carob Brown Olive Yellow
						Brownish Olive Olive Lake
						Bister Light Brown Olive
sepia Olive Lake						

Covers		Buffy Citrine				
74	Mahoning R. Mahoningtown Pa.		Mummy Brown Dull Citrine	Mars Brown Buffy Citrine	Mars Brown Brownish Olive	Light Brown Olive Olive Citrine
75	Beaver River Wampum		Mars Brown Olive Citrine	Prouts Brown Olive Lake	Warm Sepia Buffy Citrine	Olive Lake Varley Green
76	Slippery Rock Cr. Roso Point				Dresden Brown Olive Citrine	
77	Slippery Rock Cr. Wurtemberg		Mars Brown Dk Olive Buff	Carob Brown Brownish Olive		Dark Olive Buff Citrine Drab
78	Connoquenessing Cr. Connoquenessing		Blackish Brown II.			
79	Connoquenessing Cr. Harmony		Blackish Brown Dull Citrine	Blackish Brown		
80	Connoquenessing Cr. Zelienople		Lt Seal Brown			
81	Brush Cr. Celia					Warm Sepia Olive Lake
82	Connoquenessing Cr. Ellwood City			Bister Buffy Citrine		
LITTLE BEAVER DRAINAGE						
83	Little Beaver Cr. Enon Valley				Brownish Olive	
84	Little Beaver Cr. St W Branches				Buffy Citrine Isabella Color	
85	Little Beaver Cr. Cannelton					Bister Buffy Citrine
86	Little Beaver Cr. Darlington					
87	Little Beaver Cr. New Galilee				Dresden Brown Deep Olive	
88	Raccoon Cr. New Sheffield	Verona Brown Brownish Olive				Citrine
OHIO RIVER						Brownish Olive D'k Greenish Olive
89	Ohio River Shippingsport		Sepia Saccardos Umber		Light Seal Brown	
90	Ohio River Industry		Blackish Brown		Snuff Brown Olive Lake	Yellowish Olive
91	Ohio River Cooks Ferry		Bister Buffy Olive		Seal Brown Tawney Olive	
92	Ohio River Smiths Ferry				Bister Saccardos Umber	Deep Olive Buff Ecrú Olive
LAKE ERIE						
93	La Plaisance Bay	Olive Brown Snuff Brown	Cinnamon Brown Dull Citrine	Cinnamon Brown Brownish Olive	Brownish Olive Buffy Citrine	Dresden Brown
94	Cedar Point	Buffy Citrine Dresden	Warm Sepia Olive Citrine		Dresden	
95	Vermilion County Ohio					Buffy Brown Dark Olive Buff
96	Presque Isle Bay	Carob Brown Yellowish Citrine	Russet Brown Yellowish Olive	Carob Brown Buffy Citrine	Cinnamon Brown Yellowish Citrine	Brownish Olive Ecrú Olive
97	Buffalo N. Y.					
98	Port Colborne					

					Deep Colon. Buff Dark Olive Buff	Brownish Olive Honey Yellow
Olive Lake Varley Green					Deep Colon. Buff Light Brown Olive	Deep Olive Buff Ecu Olive
					Ecu Olive Buffy Olive	Carob Brown Olive Yellow
						Brownish Olive Olive Lake
						Bister Light Brown Olive
arm Sepia Olive Lake						
						Brownish Olive Buffy Citrine
						Buffy Olive Ecu Olive
					Deep Colon. Buff Ecu Olive	Dark Brown Olive Olive Lake
Brownish Olive k Greenish Olive						Buffy Citrine
		Blackish Brown		Clove Brown		
	Ecu Olive Buffy Olive	Mummy Brown Olive		Olive Light Brown. Olive	Bister Ecu Olive	Buffy Citrine Old Gold
	Ecu Olive	Olive Brown Yellow Olive		Blackish Tawney Olive		
Deep Olive Buff Ecu Olive						
traw Yellow White	Deep Colonial Buff Saccardos Olive	Dark GreenishOlive Yellowish Olive	Bister Hazel	Cinnamon Brown Olive Lake	Deep Colonial Buff Grayish Olive	Dark Olive Buff Ecu Olive
	Dark Olive Buff Grayish Olive	Dull Citrine Lt Brownish Olive		Yellowish Olive Buffy Olive	Deep Colonial Buff Deep Olive	Colonial Buff Dark Olive Buff
Buffy Brown ark Olive Buff						Prouts Brown Olive Lake
Brownish Olive Ecu Olive	Lt Brownish Olive Ecu Olive	Brownish Olive Buffy Cirrine	Verona Brown Brownish Olive	Chestnut Brown Olive Lake	Cinnamon Brown Ecu Olive	Colonial Buff Ochraceous Tawn.
			Yellowish Olive			
					Dark Olive Buff Citrine Drab	Deep Olive Buffy Olive

Eastbrook				Buffy Citrine			
95	Vermilion County Ohio						Dark Olive
96	Presque Isle Bay	Carob Brown Yellowish Citrine	Russet Brown Yellowish-Olive	Carob Brown Buffy Citrine	Cinnamon Brown Yellowish Citrine	Prouts Brown Brownish Olive	Brownish Ecrú O
97	Buffalo N. Y.						
98	Port Colborne						
99	Port Rowan						
100	Port Dover						
MAUMEE RIVER DRAINAGE							
101	St. Marys River Rockford						
102	Blanchard R. Finley Ohio						
103	Silver Cr. Williams Co., Ohio						
104	Maumee River Rapids						Mummy Buffy
105	Maumee River Station Pond						
106	Maumee River Allen Co., Ohio	Dresden Brown Olive Brown					
107	Beaver Cr. Williams Co., Ohio						
108	Swan Creek Toledo, Ohio						
109	Miami and Erie Canal Waterville, Ohio	Bister Mummy Brown					Brownish O Old
110	Ten Mile Creek Silica, Ohio						
111	St Joseph River	Brownish Olive Yellowish Citrine					
STREAMS DRAINING TO L. ERIE							
112	Raisin River Adrian Co., Mich						
113	Otter Cr. Monroe Co., Mich.						
114	Conneaut Cr. W. Springfield			Dresden Brown Buckthorn Brown	Lt Brownish Olive Buffy Citrine		Yellowish Yellowish
115	Elk Creek Miles Grove						Mikado B Ecrú
EXTRA-LIMITAL							
116	Chautauqua Lake				Chestnut Buffy Citrine		
117	Tuscarawas R. Ohio	Citrine Drab		Burnt Umber Olive Lake			Varley C Chartreuse

	Dark Olive Buff						Olive Lake
ve	Brownish Olive Ecrú Olive	Lt Brownish Olive Ecrú Olive	Brownish Olive Buffy Citrine	Verona Brown Brownish Olive	Chestnut Brown Olive Lake	Cinnamon Brown Ecrú Olive	Colonial Buff Ochraceous Tawn.
				Yellowish Olive			
						Dark Olive Buff Citrine Drab	Deep Olive Buffy Olive
							Cinnamon Brown Chamois
				Light Brownish Olive		Ecrú Olive Colonial Buff	Dp Colonial Buff Brownish Olive
						Buffy Olive Ecrú Olive	
						Dark Buff Ecrú Olive	
				Brownish Olive		Prouts Brown Dark Olive Buff	
	Mummy Brown Buffy Citrine		Bister Buffy Citrine		Brownish Olive Yellowish Olive	Buffy Olive Olive Ocher	
					Brownish Olive Yellowish Citrine		
						Primrose Yellow Buffy Olive	
				Buffy Olive Ecrú Olive		Bister Dark Olive Buff	
	Brownish Olive Old Gold						
				Hellebore Green Dark Olive Buff		Olive Brown Dark Olive Buff	
				Buffy Olive Brownish Olive		Deep Colonial Buff Buffy Olive	
				Buffy Citrine Dull Citrine		Brownish Olive Olive Lake	
	Yellowish Olive Yellowish Citrine			Ivy Green Ecrú Olive			Lt Brownish Olive Buffy Olive
	Mikado Brown Ecrú Olive			Clove Brown Deep Olive			
						Ecrú Olive Light Brown. Olive	Carob Brown Ecrú Olive
	Varley Green Chartreuse Yellow				Brownish Olive Yew Green		